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# AGRICULTURAL ECONOMICS AND SOCIOLOGY



# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

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### MARKETING OF AGRICULTURAL PRODUCTS

#### Development in Europe of Tariffs and Restrictions on International Trade in cereals.

*The present article, which will be continued in the August Bulletin, has been prepared in collaboration between the Bureau of General Statistics and the Bureau of Agricultural Economics and Sociology (1).*

#### FOREWORD.

Even before the present depression set in, the International Economic Conference of 1927 insisted upon the necessity of a reduction in the barriers which impeded international trade and adversely affected world economic activities. The economic depression which began in 1929 brought about a further increase in these impediments by which all countries sought to protect their domestic production against the rapid spread of the disorganisation due to the headlong fall in commodity prices. The outbreak of the financial crisis in 1931, followed by the abandonment of the gold standard in a number of countries, by far reaching dislocations in world economy and by the conversion of Great Britain to protection marked the beginning of a new era in the evolution of international trade. By a continuous succession of tariff increases, of quantitative restrictions of imports and of regulations for the control of dealings in foreign exchange, international trade was impeded to such an extent that of the former unity of the

(1) Mr. J. P. van Aartsen, Redactor in the Bureau of General Statistics, has undertaken the work of co-ordinating the whole of the detailed information and has prepared all the particulars relating to the period previous to 1931, as well as those of customs duties, quotas, and certain other measures of secondary importance. Mr. F. Arcoleo, Principal Redactor in the Bureau of Agricultural Economics and Sociology, is responsible for the enquiries made and for drafting the greater part of the information relating to taxes and duties, export and import licenses, export premiums, monopolies, milling and extraction rates, etc., so far as these fall into the period after the close of 1930. Mr. C. Arrigo has assisted in collecting the provisions relating to customs duties and quotas.

Information on customs duties, supplementary taxes and on quotas are published and appear regularly and monthly in the Monthly Crop Report and Agricultural Statistics.

world market there was left little more than a memory and world economy was broken up into an aggregate of more or less effectively closed national economic systems.

This development had the effect of greatly reducing the turnover of international trade, with disastrous effects upon all the branches of production largely dependent on export. These industries were severely affected, on the one hand, by excessive import duties, by quotas and other measures involving quantitative restrictions of imports, which came greatly to the fore during this period, and, on the other hand, by the degree of uncertainty with which producers had to reckon owing to the exceedingly rapid succession of the fresh measures of restriction.

While agriculture, as well as all other branches of production is very severely affected by the barriers set up to the trade in its products generally, it is particularly sensitive to the frequent changes in the regulations governing international commerce, since its power of adaptation to changing conditions of marketing is admittedly defective.

In the following pages it is the intention to give an account of the recent development of restrictions on international trade in cereals in Europe, as the largest market for imported agricultural products. For each country is given an outline of its policy up to the beginning of 1931 with regard to trade in cereals, followed by a detailed account of the measures taken during the succeeding period as far as possible up to the end of June 1933.

The restrictions imposed on dealings in foreign exchange are not included, because, though they exercise a very strong influence upon international trade in cereals and other agricultural products, they have a general application, while there are here dealt with only those restrictions which specifically apply to agricultural produce.

Though every care has been taken to make the account of the measures dealt with as complete and as accurate as possible, considering the extreme complexity of the subject, this document is in no way intended to show the exact position at any given moment with regard to the importation of any particular cereal. The purpose in view in preparing this material has been simply to bring out quite clearly the drastic character of the restrictions with which international trade in cereals has to contend, as well as the degree of uncertainty and disorganisation to which the world market is subject, from the fact of the rapid succession of fresh regulations.

Limitations of space and of time prevent an extension of the survey to other agricultural products besides cereals. It is proposed later to supplement this study by similar studies relating to certain other products.

#### GENERAL NOTE.

For the countries in which a considerable number of changes in regulations have been made since 1 January 1931 it has been considered useful to give detailed accounts of such measures, classified by character and by date



of entry into force. For this purpose the measures have been grouped and distinguished by index letters followed by numbers as follows:—

- A = Import duties.
- B = Import taxes, turnover taxes levied on imports, transfer taxes, surtaxes to compensate for exchange variations, etc.
- C = Quota allocations and prohibition of imports.
- D = Import permits.
- E = Measures relating to home trade (milling percentages, bolting percentages, etc.).
- F = Measures to encourage exports.
- G = Measures to regulate or restrict exports.

For the most important measures the date of promulgation has been given in brackets following the text and preceded by the abbreviation "reg". (regulation).

N. B. The section relating to the different countries are arranged in the French alphabetical order.

#### I. — ALBANIA.

The import trade in cereals and their flours is of very small importance to Albania. The duties are fixed in the customs tariff of 1926. Besides the customs duties, a supplementary tax is also levied, amounting to 13 % of the original duties. Since 1926 only the duty on maize has been modified, having been reduced from 20.00 to 3.00 gold francs, no supplementary tax being levied. The present duties, in so far as they are known to the Institute, are as follows (in gold francs per quintal):

	Duty	Supplement
Wheat . . . . .	25.00	3.25
Rye and barley . . . . .	15.00	1.95
Oats . . . . .	8.00	1.04
Maize . . . . .	3.00	—
Wheat flour . . . . .	37.50	4.87
Rye flour . . . . .	12.00	1.56

#### 2. — GERMANY.

*Introduction.* — Owing to the war and the stipulations of the Treaty of Versailles, which obliged Germany in each year to pay enormous sums on account of reparations, the burdens weighing on agriculture have been very heavy. Social legislation also brought considerable obligations. The index-numbers of prices of agricultural products and of farm expenses made for the purpose, show that social burdens in 1927-28 and 1928-29 were 3.9 times and later even 4 times as high as before the war, while taxes during the period 1927-28 to 1931-32 were in Eastern Germany 3.4 times and in Central Germany 4 times the prewar

total. In addition inflation had the effect that the agriculturists lost their circulating capital so that they had to borrow at very high rates of interest. As the natural result of these conditions agricultural production became much more costly.

In the total agricultural production cereals occupy an absolutely preponderant place. During the quinquennial period 1923-27 the average areas of the principal crops harvested were as follows:—

Wheat . . . . .	1,569,000 ha.
Rye . . . . .	4,553,000 »
Barley . . . . .	1,429,000 »
Oats . . . . .	3,455,000 »

The Versailles Treaty had obliged Germany not to establish customs duties or any other obstacles to imports so that, in view of the fact that costs of production were high, cereal cultivation was profitable only under naturally favourable conditions. When, in August 1925, the period of this prohibition came to an end, the prewar duties were again put into force, but with a considerable reduction for the first year and with less reduction (except for barley) for the year beginning 1 August 1926.

In the law concerned therewith it was laid down that the prewar general duties would enter into force on 1 August 1927 but the enforcement of this regulation was in fact postponed to a later date. In the brief summary following, the general duties at different periods (in each case in Reichsmarks per quintal) are indicated. —

	Prewar general duty	Duty from August 1925	Duty from August 1926	Date of entry into force of the prewar duty
Wheat . . . . .	7.50	3.50	5.00	10-7-29
Rye . . . . .	7.00	3.00	5.00	10-7-29
Barley . . . . .	7.00	3.00	7.00	1-8-26
Fodder barley under cus-				
toms control . . . . .	n. s. i.	1.00	2.00	—
Oats . . . . .	7.00	3.00	5.00	10-7-29
Maize . . . . .	5.00	2.20	3.20	1-3-28
Wheat flour, rye flour and				
maize meal . . . . .	18.75	8.00	10.00	30-12-29
Barley meal . . . . .	18.75	8.00	14.00	1-8-27
Oat meal . . . . .	18.75	10.00	14.00	1-8-27

It should also be noted that during the period from 1 April 1927 to 10 July 1929 the general duty on flour of wheat, rye and maize was Rm. 12.50 and later, until 30 December 1929, Rm. 14.50.

During this period, however, the duties to be levied on cereals and flours, originating in and consigned from countries with which Germany had a commercial treaty on the basis of the most-favoured-nation clause, were already fixed at a maximum as regards whole cereals other than maize in the commercial treaty with Sweden, which entered into force on 17 July 1926, as follows: wheat Rm. 6.50; rye and oats Rm. 6.00 — so that for these three cereals the conventional duties were up to 10 July 1929 higher than those actually levied — barley Rm. 5.00; while in a treaty with France (coming into force on 2 September 1927) the duty on flour of wheat, rye or maize was reduced to Rm. 11.50. In addition, from 20 September 1927, the duty on maize for stockfeeding imported under customs control was fixed at Rm. 2.50 in the treaty with Yugoslavia.

General duties on barley, fodder maize and flour of wheat, rye and maize, as well as from 10 July 1929 on wheat and rye, had, however, an influence on trade, since there were for a long period no treaties with Canada and Australia (to mention only two important cereal-exporting countries). With Poland relations were even such, that in 1927 special duties of Rm. 10.00 for shipments of wheat, rye and barley and of Rm. 25.00 for those of cereal flours were levied.

The conventional duties remained in force, as regards Sweden, up to 11 February 1930 and, as regards France, up to 10 July 1929.

Since the beginning of 1930, when prices began to fall seriously, duties have been several times raised. The first increase for whole cereals took place under the régime of general duties and conventional duties; the following increases, on the contrary, immediately made themselves felt.

While up to 1927 there existed an import surplus for all cereals, the customs duties began at that moment to stimulate home production so that during the following years, especially as regards rye and oats, the situation changed. The import surpluses (+) and the export surpluses (—) are given below for commercial years (August-July), in each case in thousands of quintals.

	1927/28	1928/29	1929/30	1930/31
Wheat and wheat flour	+ 24,099	+ 21,166	+ 13,039	+ 8,475
Rye and rye flour . .	+ 3,224	— 4,030	— 4,323	— 515
Barley . . . . .	+ 18,959	+ 16,148	+ 22,087	+ 8,335
Oats . . . . .	— 4	— 2,307	— 6,634	+ 356

The very heavy imports of 1927-28 were in great part the result of the poor harvest of 1927 but during the following years the overproduction of rye and oats prevented the maintenance of prices at a remunerative level. Numerous measures such as the increase of customs duties, import licences, fixing of a maximum extraction percentage for flour, fixing of a minimum percentage of home grown cereals in flour for bread making, export licences, etc. were, however, taken to bring about a more favourable position. These measures will be considered separately.

As regards import duties it seems useful, in view of the numerous modifications, to summarise the autonomous duties in the table following (in every case in Rm. per quintal):—

Date of increase	Wheat	Rye	Barley other than for fodder	Fodder barley	Oats	Cereal flour
31-12-29 .	—	—	9.00	5.00	8.00	—
20- 1-30 .	9.50	9.00	—	—	—	—
27- 3-30 .	12.00	—	10.00	10.00	12.00	22.25
18- 4-30 .	15.00	—	15.00	—	—	26.75
25- 4-30 .	—	—	—	—	—	31.50
26- 5-30 .	—	15.00	—	12.00	—	—
28- 9-30 .	18.50	—	—	—	—	38.50
26-10-30 .	25.00	—	20.00	—	—	51.50
4-12-30 .	—	—	—	18.00	—	—

It must further be noted that from 11 September 1930 the duty on fodder barley (at first Rm. 12.00, subsequently Rm. 18.00) is reduced to Rm. 6.00 in cases where the importer can prove that he has bought an equivalent quantity of denatured rye or of potato flakes, and that from 5 November 1930 there exists a reduced duty of Rm. 11.25 for hard wheat destined for the manufacture of hard wheat groats and imported under customs control.

These duties were at first fixed in such a way as to make it possible for the Government to alter them, in cases where this should be necessary in view of price changes. The first law, which came into force on 31 December 1929, fixed the duty on wheat at from Rm. 3.50 to Rm. 9.50; the second, in force as from 27 March 1930, at between Rm. 1.50 and Rm. 12.00. The first law took as basis the last quarter of 1929, when the average price of wheat was only Rm. 23.00 but, as it was intended to arrive at the price of Rm. 26.00, the autonomous duty was fixed immediately at its maximum. The third law, in force from 18 April, suppressed the limits between which the duty should be fixed. Analogous regulations were applied to other cereals.

For flour the duties were fixed in accordance with the duty on wheat so that they amounted at first to Rm. 4.25 per quintal above the duty on 150 kg. of wheat, from 28 March 1930, to Rm. 5.25 above the duty on 150 kg. of wheat and finally, from 28 September, to Rm. 1.50 above the duty on 200 kg. of wheat.

The duty on maize was still fixed in the treaty with Yugoslavia. This obstacle was removed by creating under the maize law, which came into force on 1 April 1930, a Monopoly (« Reichsmaisstelle ») on this cereal for the duration of two years but afterwards extended. It should be noted that private trade is still responsible for the purchase of the imported product but that such product can only be imported after being bought from the trader by the Monopoly. The general duty on maize was at the same time lowered to Rm. 2.50. The Monopoly was to fix from time to time the additional rate to be paid above the import price. There is here a double advantage: on the one hand a too acute competition between maize and other cereals can be avoided, on the other the fixed prices allow a good profit, which is employed to assist agriculture.

The export of cereals was necessary from time to time throughout the period considered. Especially after a good harvest the demand was not always strong enough in the great consuming regions of the West and the South to allow the agriculture of Eastern Germany to obtain a profit, taking into consideration the fact that transport by rail for long distances is always costly.

It was on account of the difference in the costs of transport by sea and by land that there had already been organised at the end of the last century the so called "Einfuhrscheinsystem", i. e. the system of import certificates, which enable exporters of certain products to import duty free at a later date a definite quantity of certain products up to a value corresponding to that which these exported products would have represented if calculated at such date. In accordance with the coming into force of the import duties in 1925, these import certificates were restored for the harvest of that year as from 1 October. During the period from 1 August 1926 to 10 October of the same year they had only a value corresponding to the duty as before 1 August 1926. During the period from 18 May to 31 July 1927, when the German price of rye was very high in comparison with that on the free markets, certificates were not delivered. From the time when the duties on cereals began to be increased by successive steps (31 December 1929), there was a further change in the system so that the value of the "Einfuhrscheine" did not correspond any longer with the duties on cereals. Their maximum value was then fixed as Rm. 6.50 for wheat and barley and Rm. 6.00 for rye. This was necessary because, by the spring of 1930, the duties had risen higher than the difference between the prices in Germany and those on non-protected markets. Later on they even began to rise above the prices in Germany.

At this time Germany and Poland were the two principal rye-exporters in the world. To reduce the supply on the importing markets it was desirable to arrive at an agreement with Poland and this obliged the Government to organise a compulsory syndicate of German rye exporters. This syndicate was formed at the beginning of 1930, and in connection with it special conditions were established for the delivery of import certificates.

In view of the delicate situation of the public finances the Government felt itself obliged to reduce the distribution of import certificates. At first (20 January 1930) the certificates were limited to the export of 500,000 quintals of barley of specific weight above 67 kg.; afterwards (18 April 1930), for a quota of 700,000 quintals of rye, the value of the certificates was fixed at Rm. 9.00; on the other hand the delivery of these certificates was completely abolished as from 4 June 1930 for oats, as from 5 June for wheat flour, as from 5 July for rye, as from 3 October for wheat, barley, flour and other products of rye milling and as from 5 November for other flours and milling products.

As has already been said, from 1927 the rye and oat crops developed to such an extent that overproduction may be said to have occurred, while considerable quantities of wheat and barley had to be imported during the same period. The Government attempted, and with partial success, to bring about an increase in the use of rye for breadmaking, at first by very active propaganda for the consumption of rye bread, afterwards by fixing a maximum extraction percentage and a

minimum percentage of homegrown rye in flour. The law of 17 July 1930 laid it down that, for the period 15 August 1930 to 30 September 1932, three qualities of rye bread might be made. The extraction percentage had to be either 100 % (whole bread, "Vollbrot") or 60 % at the maximum. Whole bread as well as other rye bread had to consist up to 97 % of rye flour, while mixed bread had to consist up to at least 60 % of rye flour with an extraction percentage not above 60. A presidential decree of 2 December 1930 changed some of these regulations and the more recent legislation gives much more liberty.

At the same time an attempt was made to find other markets for rye by increasing the price of maize (monopoly) and that of barley (customs duty) and it was found possible in practice to avoid the purchase of imported fodder barley except together with denatured rye (Eosinroggen).

Special organisations had previously on several occasions purchased large quantities of rye, which were put on the market immediately after the harvest.

All these measures together, however, failed to prevent a reduction in rye prices, especially in relation to those of wheat. In the following summary are given the average prices of the two cereals at Berlin in Rm. per quintal for the more recent agricultural seasons:—

	Wheat	Rye
1927-28 . . . . .	25.03	25.00
1928-29 . . . . .	21.83	20.47
1929-30 . . . . .	25.33	17.04
1930-31 . . . . .	26.00	17.18
1931-32 . . . . .	23.63	19.00
1932-33 (10 months) . . . . .	19.74	15.59

This difference, accentuated specially during these last few years, was due also to the fact that wheat, as a cereal used in breadmaking, could be completely absorbed for that purpose. For wheat the law of 4 July 1929 already established that in the commercial season 1929-30 the mills would be obliged to employ at least 30 % of home-grown wheat and in the first four months not less than 40 %. For more recent data see below.

This difference in sensitiveness had the effect of increasing the cultivation of wheat and restricting that of rye, and this was also the object of the legislation.

Average	Area in thousand ha.	
	Wheat	Rye
1923-27 . . . . .	1,569	4,553
1928. . . . .	1,728	4,634
1929. . . . .	1,600	4,727
1930. . . . .	1,781	4,711
1931. . . . .	2,167	4,366
1932. . . . .	2,280	4,450
1933. . . . .	2,318	4,513

For the purpose of increasing the cultivation of barley and of decreasing that of oats other measures of analogous character were taken.

The result of all this legislation was that, already at the beginning of 1931, the German market was practically independent of the situation outside the country.

In the following summary the more important measures taken after 1 January 1931 are indicated, in so far as they are known to the Institute.

*Wheat and its derivatives.*

- A. 1 (15-1-31) Wheat imported under customs control for the manufacture of wheat starch, duty reduced: Rm. 11.25.
- E. 1 (1-2-31) Minimum percentage of home-grown wheat for milling 75 %.
- E. 2 (1-4-31) Minimum percentage of home-grown wheat for milling 50 %.
- A. 2 (15-5-31) Wheat imported under customs control and by mills, which in the second quarter of 1930 employed foreign wheat or spelt for the manufacture of flour and groats, for a quota of 20 % of these quantities destined for the manufacture of flour or groats, duty reduced: Rm. 20.00 (duty valid until 15-6-31; later prolonged until 15-7-31).
- E. 3 (7-6-31) An addition of 10 % of potato flour is permitted in products of wheat milling for bread making.
- A. 3 (10-6-31) Duty on cereal flours reduced to Rm. 1.50 above the duty on  $1\frac{2}{3}$  quintals of whole wheat: Rm. 43.16.
- A. 4 (16-7-31) Wheat, regulations as in A. 2 but quota reduced to 5 %; duty valid until 31-7-31.
- E. 4 (1-8-31) Minimum percentage of home-grown wheat for milling 60 %.
- E. 5 (16-8-31) Minimum percentage of home-grown wheat for milling 97 %. At the same time it will be possible to replace 27 % of the total wheat milled by wheat imported in compensation for wheat exported previously with export certificate (Austauschweizen).
- F. 1 (20-8-31) The regulations in force concerning import certificates (Einfuhrscheine) distributed on the export of wheat and rye are modified. Thenceforward export certificates (Ausfuhrscheine) may be issued, giving the right of free import or of import at reduced duties of the same *quantities* of goods as are exported, and not, as previously, giving the right to a quantity equivalent to the *value* shewn in the import certificate.  
As the difference between the price on the non-protected market and the price in Germany for the same product is not fixed the value of the export certificate also changes.
- A. 5 (24-8-31) Wheat, on production of an export certificate proving export during the period ending 31-12-31; Rm. 2.00 (duty valid until 31-7-32).
- E. 6 (16-10-31) Mixing percentage of potato flour in products of the milling of wheat for breadmaking fixed at 4 %. The utilisation of these products is obligatory for concerns using wheat flour for the manufacture of bread or pastry (Regulation valid until 15-4-32).

- A. 6 (16-11-31) Hard wheat imported under customs control by mills which manufactured hard wheat groats in 1931 before 1 October for the manufacture of these groats: Rm. 11.25 (duty valid until 31-7-32).
- B. 1 (1-1-32) The percentage tax on turnover, which, so far as it concerns imported merchandise, is called a compensation tax (Ausgleichssteuer) is 2%. For whole cereals, the residues of the manipulation of these cereals (including cereal bran) is at a reduced rate of 0.85 %. Reexported products are exempt from this tax.
- F. 2 (31-3-32) The regulation of import certificates (Einfuhrscheinordnung) is abrogated and replaced by a regulation of export certificates (Ausfuhrscheinordnung), relating to all kinds of cereals (and legumes) as well as to their milling products, while the regulation of home-grown products under F. 1 referred only to wheat and rye. The export certificate to be delivered on the exports of milling products must correspond to the quantities of the whole products employed in their manufacture (Reg. of 19-3-32).
- A. 7 (1-4-32) Supertariff for shipments of certain products originating in or consigned from Poland or Canada:—  
for Poland:—  
wheat, general duty . . . . . Rm. 30.00  
wheat imported under customs control for the manufacture of wheat starch. . . . . » 14.00  
hard wheat imported under customs control for the manufacture of hard wheat groats (see A. 6) . . . » 14.00  
for Canada:—  
cereal flours Rm. 15.00 above the duty on  $1\frac{2}{3}$  quintals  
of wheat . . . . . » 56.66
- A. 8 (18-4-32) Wheat imported under customs control for poultry-feeding (Hühnerweizen) in quantities determined by and on production of a special licence from the Ministry of Finance: exempt (exemption valid until 30-6-32, later prolonged until 10-7-32).
- A. 9 (1-5-32) Wheat imported under customs control for the manufacture of flour and groats, to be imported by the mills, which between April and June 1930 employed foreign wheat or spelt for the manufacture of flour and groats. Import limited to the months of May and June 1932 and to 15 % of the quantities of home-grown or imported wheat and rye, employed for the same purpose in similar establishments during the second quarter of 1930: Rm. 18.00.
- A. 10 (1-7-32) Supertariff for shipments originating in or consigned from Canada: abrogated.
- E. 7 (1-8-32) Minimum percentage of home-grown wheat for milling 97 %;



- A. 11 (1-8-32) Hard wheat imported under customs control for the manufacture of hard wheat groats, to be imported by the mills up to a quota of 45% of the quantity of foreign hard wheat utilised in 1931 for the same purpose :  
Rm. 16.00 (duty valid until 31-7-33 ; the duty for shipments originating in or consigned from Poland amounts to Rm. 20.00).
- A. 12 (1-8-32) Wheat on delivery of an export certificate proving export during the period :—  
1-8-32 to 31-10-32 : exempt ;  
1-11-32 to 31-1-33 : Rm. 0.75 ;  
(duty valid until 31-7-33).
- E. 8 (16-8-32) Minimum percentage of home-grown wheat for milling 97 % (percentage to remain in force until 15-8-33).
- E. 9 (14-10-32) The mixing percentage of potato flour in products of wheat milling for breadmaking is fixed until 15-10-33 at 2.50 %.
- A. 13 (1-2-33) Wheat on delivery of a certificate proving export of the same quantity of seed wheat during the period 1-2-33 to 31-5-33 : exempt (exemption valid until 31-7-33).
- A. 14 (6-3-33) Wheat to be imported by mills belonging to a special organisation on production of an export certificate showing the export of a corresponding quantity of products of wheat milling : Rm. 0.75 (duty valid until 31-7-33).

*Rye and its derivatives.*

- A. 1 (5-3-31) Rye, general duty increased in view of the risk of imports of Russian rye purchased with this object in Rotterdam, to Rm. 20.00.
- E. 1 (9-4-31) The minimum extraction percentage for flour from home-grown rye is changed from 60 % to 70 % in conformity with the bread law.
- F. 1 (20-8-31) See F. 1 wheat.
- A. 2 (24-8-31) Rye on delivery of an export certificate proving export during the period ending 31-12-31, Rm. 1.00 (duty valid until 31-7-32).
- B. 1 (1-1-32) See B. 1 wheat.
- F. 2 (31-3-32) See F. 2 wheat.
- A. 3 (1-4-32) Supertariff for shipments of certain products originating in or consigned from Poland or Canada :—  
for Poland : rye . . . . . Rm. 30.00  
for Canada : cereal flour . . . . . » 56.66
- A. 4 (1-7-32) See A. 10 wheat.
- E. 2 (31-7-32) Minimum extraction percentage abrogated.

- A. 5 (1-8-32) Rye, on delivery of an export certificate proving export during the period :  
     1-8-32 to 31-10-32 : exempt ;  
     1-11-32 to 31-1-33 : Rm. 0.50 ;  
     (duty valid until 31-7-33).
- A. 6 (1-2-33) Rye, on production of a certificate proving the export of the same quantity of seed rye during the period 1-2-33 to 31-5-33 : exempt (exemption valid until 31-7-33).
- A. 7 (6-3-33) Rye, to be imported by mills belonging to a special organization on production of an export certificate showing the export of a corresponding quantity of products of rye milling : Rm. 0.50 (duty valid until 31-7-33).

*Barley and its derivatives.*

- A. 1 (26-6-31) Barley for stockfeeding imported under customs control, on controlled purchase of a certain quantity of denatured rye, potato flakes or maize from the monopoly, in quantities to be fixed separately: Rm. 5.00.
- F. 1 (25-11-31) Re-introduction of import certificates, exempting exporters of barley and oat products from payment of import duties on similar products imported, suspended on 5-11-30.  
     Value shown on the certificates for barley products :  
     Malt Rm. 10.00.  
     Pearl barley, groats, semolina and barley flakes and meal resulting from the manufacture of these products : Rm. 8.00 (reg. of 17-11-31).
- A. 2 (1-12-31) Barley for stockfeeding imported under customs control on controlled purchase of  $\frac{1}{3}$  quintal of potato flakes : Rm. 4.00.
- E. 1 (18-12-31) Barley for stockfeeding imported under customs control ; duty unmodified but the controlled purchase of a certain quantity of home grown barley, potato flakes and other products of home agriculture or their derivatives in a quantity to be fixed separately, now obligatory.
- B. 1 (1-1-32) See B. 1 wheat.
- F. 2 (16-1-32) The issue of import certificates in connection with the export of barley malt revoked (reg. of 8-1-32).
- F. 3 (31-3-32) See F. 2 wheat. The regulations of F. 1 and of F. 2 remain in force.
- A. 4 (1-4-32) Supertariff on shipments of certain products originating in or consigned from Canada:—  
     barley, general duty . . . . . Rm. 25,00  
     barley for stockfeeding, under customs control. . . . . » 20,00
- A. 5 (1-7-32) See A. 10 wheat.

- E. 2 (9-9-32) Barley for stockfeeding, imported under customs control; duty unmodified but the purchase of a quintal of denatured rye or of a quintal of home-grown barley now obligatory.
- F. 4 (18-9-32) Regulations of F. 1 and F. 2 revoked. Issue of import certificates abrogated (reg. of 6-9-32).
- A. 6 (26-10-32) Barley for stockfeeding, import under customs control, up to a quota of 20 % of the quantity of barley exported in the form of malt by the malteries having the right to receive an export certificate; on production of a permit, stating that such quantity of barley in the form of malt has been exported: exempt (exemption valid until 31-7-33).
- A. 7 (26-10-32) Barley other than for stockfeeding, on production of an export certificate, stating that a corresponding quantity in the form of pearled grain, semolina, groats and flakes, as well as meal resulting from the manufacture of these products, has been exported: exempt (exemption valid until 31-7-33).
- A. 8 (1-2-33) Barley on production of a certificate proving the export of the same quantity of seed barley during the period 1-2-33 to 31-5-33: exempt (exemption valid until 31-7-33).
- C. 1 (10-2-33) Barley for stock feeding, import prohibited up to end of current agricultural season, except with export certificate.

*Oats and oat derivatives.*

- A. 1 (3-5-31) Oats, general duty: Rm. 16.00.
- F. 1 (25-11-31) The concession of import certificates reintroduced (see F. 1 barley). Value shown on the certificates for oats milling products, excluding oats merely broken or rolled: Rm. 8.00. (reg. of 17-11-31).
- B. 1 (1-1-32) See B. 1 wheat.
- F. 2 (16-1-32) The issue of import certificates in connection with the export of bruised or coarsely pulverized oats revoked (reg. of 8-1-32).
- F. 3 (31-3-32) See F. 2 wheat. The regulations of F. 1 and of F. 2 remain in force.
- F. 4 (18-9-32) Regulations of F. 1 and of F. 2 revoked. Issue of import certificates abrogated (reg. of 6-9-32).
- A. 2 (26-10-32) Oats, on production of an export certificate stating that a corresponding quantity of oats in the form of milling products (excepting rough oats coarsely broken, rolled, bruised or otherwise reduced) has been exported: exempt (exemption valid until 31-7-33).
- A. 3 (1-2-33) Oats, on production of a certificate proving the export of the same quantity of seed oats during the period 1-2-33 to 31-5-33: exempt (exemption valid until 31-7-33).

- A. 4 (11-3-33) Oats, on production of an export certificate proving the export of the same quantity of oats: Rm. 8.00.  
(duty valid until 31-7-33).
- A. 5 (11-3-33) Oats, on production of an export certificate stating that a corresponding quantity in the form of milling products (excepting rough oats coarsely broken, rolled, bruised or otherwise reduced) has been exported: Rm. 8.00 (in case of authorized export before 11-3-33: exempt; see A. 2) (reduced duty valid until 31-7-33).

*Maize and derivatives.*

- E. 1 (1-4-32) State monopoly prolonged for 2 years until 31-3-34.
- A. 1 (10-1-33) Supertariff is applied to shipments of maize originating in or consigned from Argentina: duty Rm. 25.00.
- A. 2 (13-2-33) Supertariff for Argentine maize abrogated (see A. 1).
- E. 2 (2-6-33). The measure limiting the action of the monopoly to 31-3-34 (E. 1) abrogated. At the same time the monopoly is reorganised.

*General note with reference to maize.* — Apart from the measures referred to above, others adopted in recent years call for mention. As already stated in the introduction to this section the maize monopoly has had the result of regulating to a certain extent the consumption of other feed grains. By raising or lowering the additional rate as may be advantageous to the monopoly it has been possible to limit maize consumption whenever the supply of other feed grains was in excess of demand, and to increase it when a certain shortage of such other grains might involve risk to the financial results of cattle breeding and fattening.

In addition for the encouragement of egg production a cheap maize has been made available for poultry breeders at a low price. This poultrymaize (Hühnermais) has to be supplied through the co-operative egg-marketing societies; hence breeders who desire to benefit must become members of these societies, a fact which has had an important influence on the egg-market. At the same time the wheat and barley market have benefited, as the special maize is sold only in combination with certain quantities of these other products, bought in the ordinary course on the home market.

The monopoly also supplies maize at a cheap rate to manufacturers of maizena while these are compelled to make exclusive use of potato flour in the manufacture of glucose, instead of maize flour as formerly. By this arrangement an increase in the consumption of potato flour, a native product, is secured. These measures however do not suffice to secure a complete control of the home market as a number of other products, used in stock feeding, remain still free. The trade in these products also, as will be seen from the following table, has gradually been absorbed by the "Reichsmaisstelle".

Date of coming under the monopoly	Products
8-7-32	Dari, sorghum, etc.
29-12-32	Cereals other than rye, wheat, barley, oats, buckwheat, millet, maize, dari and rice. Unpolished rice. Polished rice. Rice waste products, other than as required for human consumption. Waste products of starch manufacture, other than as required for human consumption.
6-4-33	Oil seeds. Oil-seed cake, etc.

It should be noted that the additional rates levied by the monopoly are relatively high in the case of products required for cattle-feeding but very low where it is guaranteed that the products will be used for human consumption.

*General note referring to all products.* — In the trade treaties recently concluded with certain European States, which are exporters of cereals, Germany has conceded preferential duties, subject to the condition that the other States with which Germany has trade treaties based on the most favoured nation clause raise no objection. Since on the other hand up to the present this opposition still exists, it has not been found possible to enforce that part of the treaties which refer to these preferences. It may be of interest however to quote the most significant provisions that have been stipulated in this regard.

The new treaty with Bulgaria contains as preferential duties, expressed as percentages of the general duties in force at the time of importation, the following reduced duties :—

Bulgarian wheat . . . . .	75 %
Bulgarian barley, for cattle feeding, under customs control in the event of a controlled purchase of barley, of potato flakes or of other native agricultural products . . . . .	50 %
Other Bulgarian barley for cattle feeding under customs control.	50 %
Bulgarian . maize . . . . .	40 %

The treaty with Hungary contains a similar stipulation for Hungarian wheat. It should be added that Germany at the time of the Stresa Conference (September 1932) reckoned on allowing similar preferences also to Rumania and Yugoslavia. However, in consequence of the termination of the trade treaty with the last named country as from 6 March 1933, Yugoslavia no longer enjoys most favoured nation treatment.

The difficulty of giving effect to treaties of this order is further seen in the action which Germany found itself compelled to take with regard to Argentina. Argentina has for a long time defended the most favoured nation

clause in its integrity. As however regional agreements containing variations in favour of countries in the same region were generally considered as permissible, Argentina had concluded an agreement of this kind with Chile. This agreement was however unfavourable to Germany and it was by way of reprisals for the agreement arranged by Argentina, which did not wish to allow the preferential clause in respect of cereals from South Eastern Europe, that Germany increased the duty on Argentina maize until the time when certain clauses in the agreement between Argentina and Chile were modified.

### 3. — AUSTRIA.

*Introduction.* — Austria, within its post-war frontiers, is principally a mountainous country, a fact which encourages specialisation on livestock production. The area of permanent meadows and pastures is considerably larger than that of arable land. On the areas under crop, cereals preponderate, as may be seen from the figures of areas harvested on the average for the five-year period 1923-27, viz:—

Wheat . . . . .	198,000 ha.
Rye . . . . .	382,000 »
Barley . . . . .	142,000 »
Oats . . . . .	313,000 »
Maize . . . . .	60,000 »

giving a total of 1,095,000 ha. or nearly 57 % of the total arable land. Even if it is remembered that much rye bread is eaten in Austria, it is evident that a population of 6,700,000 inhabitants (an average figure for recent years), cannot be fed from the produce of the area under bread cereals, especially as yields are rather low in the mountainous regions. The balance of production and import surplus in the period 1923-27 was as follows (in thousands of quintals):—

	Production	Import Surplus
Wheat . . . . .	2,692	4,255
Rye . . . . .	4,700	909
Barley . . . . .	1,929	705
Oats . . . . .	3,938	833
Maize . . . . .	1,043	1,411

In the former Austro-Hungarian Empire there was already tariff protection for agricultural products, which before the war was quite effective, as the different regions were in a very good position to complement each other, each of them producing the commodities with respect to which it possessed natural advantages. Some encouragement to cereal-growing was thus given to farms situated within the borders of the present Austrian Republic. There was however no great development there, more favourable conditions existing in

a large part of former Hungary. The regions at present forming Austria used to be in fact exporters of industrial products, to which the frontiers of the other new States were, after the war, nearly or completely closed. It was consequently considered necessary, in order to maintain equilibrium in the trade balance, to give more attention to agriculture. This was all the more urgent because of the existence in present-day Austria of the very large capital, Vienna, which had formerly been the principal centre of consumption of the Empire. It could, as such, be easily maintained in a country of 51,356,000 inhabitants (1910) of which its 2,031,000 inhabitants represented only 4 % but only with great difficulty when its 1,825,000 inhabitants represented the high proportion of 27 % in a country having the reduced population of 6,733,000 inhabitants (1931).

In 1924, when the new customs law entered into force, it was nevertheless believed to be possible to restrict protection to very narrow limits: for wheat, rye, barley and oats the same duty was fixed, always in relation to the price of the first-named product on the home market and varying, in gold crowns, from 0.25 to 4.00. After currency stabilisation it was possible to fix the duty more exactly. The duties continued to be established in gold crowns but with the stipulation that payment might be made in schillings of the legal currency on the conversion basis of 1 gold crown = 1.44 schilling. Owing to the necessity of obtaining advantages in customs treaties with the other Succession States, the duties were considerably increased in the autonomous tariff so that they could be lowered again if necessary to obtain concessions from the other party by means of a customs convention.

This system has, since then, always been followed. The first duty fixed in this way was one of 1.50 gold crowns per quintal on barley (treaty of 1924 with Czechoslovakia).

It was followed by a duty on cereal flours. Whereas the customs law fixed this duty at 3.00 gold crowns above the duty on 1 quintal of wheat, which supplement was raised on 10 August 1926 to as much as 5.00 gold crowns above the duty on 1 quintal of the same cereal in the grain, a treaty with Hungary, enforced on 14 August 1926, lowered it (for flour and meal other than maize meal) to only 1.45 gold crowns above the duty on 1 quintal of the same cereal in the grain. The restriction exists, however, that this supplement is calculated on the basis that the duty on the cereal in the grain will not reach 1.50 gold crowns. If, on the contrary, it reaches 1.50 gold crowns or more the supplementary duty is automatically raised to 1.65 gold crowns.

These duties were not, however, sufficient for Austrian agriculture and have since been increased several times. In 1927 and 1928 the duties on wheat, rye and oats were fixed at 2.00 gold crowns per quintal in the new treaties with Yugoslavia and Hungary and that on cereal flours and meals (other than maize meal) was fixed, for the latter country, at 5.00 gold crowns. These conventional duties remained in force until 15 July 1931 but in 1928 the autonomous duty on flours was raised to 8.00 gold crowns above the duty on 1 quintal of the same cereal in the grain and on 27 July 1930 it was further increased to 8.00 gold crowns above that on 2 quintals of the same cereal in the grain. At

the same time, in view of the marked fall in prices, it was laid down that the Government could levy a supplementary duty on wheat, rye, barley and oats in the event of a fall in prices, other than one of a temporary nature, which might become a danger to cereal production.

During this period of fixing duties, recourse was had to another means of aiding cereal producers. The law of 27 September 1929 regulated exports of cereals in the grain (and also of cattle) by means of import certificates (*Einfuhrscheine*), to be issued against exports of wheat, rye, barley and oats of good quality and valid, within the nine months after export of such products, for the payment of import duties on any product imported up to an amount equal to the sum which would have had to be paid for import of the same quantity of the same cereal at the date of export. For cereals this certificate could be used either by the exporter himself or by a member of cooperative organisations. A new law of 29 January 1930 limited the use of certificates by the exporter to the payment on imports of wheat, rye, barley and oats.

The law of 16 July 1930 having reference to the special measures to be adopted for remedying the agricultural crisis has given the possibility of utilising for the purpose a special fund of 96 million schillings for providing crop premiums and subsidising the handling of cereals used in breadmaking, as also for giving special assistance to the peasants in the mountain districts.

A fiscal measure, which entered into force on 1 January 1930 and has some bearing on the formation of prices, is the turnover tax levied on imports and amounting to 2 % *ad valorem* for cereals in the grain, 7 % for wheat and maize groats and for flour and 5 % for other milling products. The value includes the import duty.

The conventional duties on 1 January 1931, fixed in 1927 and 1928, were as follows (per quintal) :—

Wheat, rye, oats (Hungary) . . . . .	2.00 gold crowns
Barley (Czechoslovakia) . . . . .	2.00       "       "
Barley for fodder, recognised as such (autonomous) .	exempt.
Maize (autonomous) . . . . .	exempt.
Wheat flour, rye flour, barley meal and oatmeal (Hungary) . . . . .	5.00 gold crowns
Maize-meal (autonomous) . . . . .	8.00       "       "

These conventional duties are imposed on commodities originating in and consigned from neighbouring countries, which are, in general, the only important sources of cereals. In the event of shortage occurring in the Danubian countries, on the contrary, account must be taken of the fact that the United States also has a commercial treaty with Austria giving most favoured nation treatment but that shipments from Canada, Argentina and Australia are affected by the general duties.

In the following summary are given the more important modifications in so far as they are known to the Institute.



*Wheat and its derivatives.*

- F. 1 (1-5-31) The import certificate system introduced by the law of 27-9-29 and modified by that of 29-1 30 abrogated (reg. of 27-3-31).
- A. 1 (1-7-31) Wheat: the general duty provided for in the new general tariff of 27-7-30 increased by a supplementary duty of 4.00 gold cr. At the same time the general duty on wheat flour increased by twice the amount of this supplementary duty: 8.00 gold cr.
- A. 2 (15-7-31) Wheat: the duty fixed in the treaty with Hungary abrogated: for shipments of any origin:—  
     basic duty . . . . . 6.00 gold cr.  
     supplementary duty . . . . . 4.00 " "
- A. 3 (15-7-31) Wheat flour: duty fixed in the treaty with Hungary modified: 3.50 gold cr. above the duty on 2 quintals of wheat:  $3.50 + 2 \times (6.00 + 4.00) = 23.50$  gold cr.
- A. 4 (12-2-32) Wheat: supplementary duty changed to 5.00 gold cr. Duty on wheat flour:  $3.50 + 2 \times (6.00 + 5.00) = 25.50$ .
- A. 5 (15-7-32) Commercial treaty with Hungary terminated; shipments of wheat flour of this origin paid the general duties:  $8.00 + 2 \times (6.00 + 5.00) = 30.00$  gold cr. The duty of 3.50 gold cr. above the duty on 2 quintals of wheat remains in force as a conventional duty, fixed also in the treaty with Yugoslavia (enforced 9-3-32).
- D. 1 (16-7-32) Imports of flour and milling derivatives of wheat, rye and barley made subject to the production of a special import licence. Provisionally this will be issued unconditionally except for shipments consigned from Hungary.
- D. 2 (4-8-32) Imports from Hungary of wheat flour and semolina made subject to the production of an import licence. The granting of a licence is made conditional on the export to Hungary of Austrian products of the same value.
- B. 1 (21-8-32) A crisis surtax of 100 % added to the turnover tax, giving the following total amounts:—  
     for cereals in the grain . . . . . 4 % *ad valorem*  
     for cereal flours (except rye flour, which is exempt  
         from the surtax) . . . . . 14 % " "  
     for wheat and maize groats . . . . . 14 % " "  
     for other cereal milling products . . . . . 10 % " "
- D. 3 (13-9-32) The import licence for flours and other milling products of wheat, rye and barley may be granted immediately by the customs offices, except in the case of shipments consigned from Hungary.
- A. 6 (1-1-33) Wheat flour: new commercial treaty with Hungary, again fixing the duty at 3.50 gold cr. above the duty on 2 quintals of wheat.

- D. 4 (1-1-33) The new treaty with Hungary having entered into force, the obstacles to obtaining an import licence for shipments from this origin were abrogated.
- B. 2 (30-3-33) The official relation between the gold crown and the schilling of legal currency changed from 1 gold cr. = 1.44 schilling to 1 gold cr. = 1.80 schilling.
- A. 7 (30-3-33) Wheat: the supplementary duty reduced to 2.80 gold cr. The duty on flour consequently  $3.50 + 2 \times (6.00 + 2.80) = 21.10$  gold crowns. (Supplementary duty fixed until 20-6-33; later prolonged).
- B. 3 (3-6-33) Official ratio between the gold crown and the schilling of the legal currency altered to 1 gold crown = 1.83 schilling.

*Rye and its derivatives.*

- F. 1 (1-5-31) See F. 1 wheat.
- A. 1 (1-7-31) Rye and rye flour: general duties increased by supplementary duties of 4.00 gold cr. and 8.00 gold respectively; see A.1 wheat.
- A. 2 (15-7-31) Rye: the duty fixed in the treaty with Hungary abrogated; for shipments of any origin:—  
     basic duty . . . . . 6.00 gold cr.  
     supplementary duty . . . . . 4.00 » »  
     The duty on flour fixed in the new treaty with Hungary at 3.50 gold cr. above the duty on 2 quintals of rye i. e. at this moment at 23.50 gold cr.; see also A. 3 wheat.
- A. 3 (12-2-32) Rye: the supplementary duty reduced to 2.00 gold cr. The duty on rye flour consequently 19.50 gold cr.
- A. 4 (15-7-32) Commercial treaty with Hungary terminated; general duty in force: rye flour 24.00 gold cr.
- D. 1 (16-7-32) See D. 1 wheat.
- A. 5 (5-8-32) Rye: supplementary duty increased to 4.00 gold cr. The duty on rye flour consequently 28.00 gold cr.
- B. 1 (21-8-32) Rye: crisis surtax (see B. 1 wheat). Rye flour exempt from the crisis surtax.
- D. 2 (13-9-32) See D. 3 wheat.
- A. 6 (1-1-33) Rye flour: new commercial treaty with Hungary; duty: 3.50 gold cr. above the duty on 2 quintals of rye.
- D. 3 (1-1-33) See D. 4 wheat.
- B. 2 (30-3-33) See B. 2 wheat.
- A. 7 (30-3-33) Rye: the supplementary duty reduced to 2.00 gold cr. The duty on flour consequently 19.50 gold cr.
- B. 3 (3-6-33) See B. 3 wheat.

*Barley and its derivatives.*

- F. 1 (1-5-31) See F. 1 wheat.
- A. 1 (1-7-31) Barley and barley meal: general duties increased by supplementary duties of 4.00 and 8.00 gold cr. respectively.
- A. 2 (15-7-31) Meal and other barley milling products: new duty in the commercial treaty with Hungary: 3.50 gold cr. above the duty on 1.5 quintals of barley:  $3.50 + (1.5 \times 2.00) = 6.50$  gold cr.
- A. 3 (28-7-31) Barley: new duty in the commercial treaty with Czechoslovakia: 6.00 gold cr. and supplementary duty of 4.00 gold cr.. At the same time the duty on barley malt fixed at 2.00 gold cr. above the duty on 1.33 quintals of barley = 15.30 gold cr. Corresponding to the increase in the duty on whole barley, that on meal, etc., raised to  $3.50 + (1.5 \times 10.00) = 18.50$  gold cr.
- A. 4 (15-7-32) Barley meal, etc.: the treaty with Hungary terminated. Products of this origin to pay the general duty of 28.00 gold cr. See A. 5 wheat.
- D. 1 (16-7-32) See D. 1 wheat.
- B. 1 (21-8-32) See B. 1 wheat.
- D. 2 (22-8-32) Imports from Hungary of unroasted barley malt subjected to a licence. For conditions, see D. 2 wheat.
- D. 3 (30-8-32) Imports of barley (except feeding barley) and of unroasted barley malt subjected to a special licence.
- D. 4 (13-9-32) See D. 3 wheat.
- A. 5 (1-1-33) Barley meal, etc.: new commercial treaty with Hungary; duty: 3.50 gold cr. above the duty on 1.5 quintals of barley.
- D. 5 (1-1-33) See D. 4 wheat.
- B. 2 (30-3-33) See B. 2 wheat.
- B. 3 (3-6-33) See B. 3 wheat.

*Oats and oat derivatives.*

- F. 1 (1-5-31) See F. 1 wheat
- A. 1 (15-7-31) Oat meal and other milling products: new duty in the commercial treaty with Hungary: 3.50 gold crowns above the duty on 1.5 quintals of oats: 6.50 gold crowns.
- A. 2 (28-7-31) Oats: new duty in the commercial treaty with Czechoslovakia: 3.00 gold crowns without supplement. The duty on oat meal and other milling products:  $3.50 + (1.5 \times 3) = 8.00$  gold crowns.
- A. 3 (15-7-32) Oat meal etc.: commercial treaty with Hungary terminated; general duty in force:  $8.00 + (2 \times 3.00) = 14.00$  gold crowns.
- B. 1 (21-8-32) See B. 1 wheat.

- A. 4 (1-1-33) Oat meal, etc., new commercial treaty with Hungary; duty: 3.50 gold crowns above the duty on 1.5 quintals of oats.
- D. 1 (8-1-33) Imports of oats subjected to a special licence.
- B. 2 (30-3-33) See B. 2 wheat.
- B. 3 (3-6-33) See B. 3 wheat.

*Maize and its derivatives.*

- B. 1 (21-8-32) See B. 1 wheat.
- B. 2 (30-3-33) See B. 2 wheat.
- B. 3 ( 3-6-33) See B. 3 wheat.

*General note.* — Attention may be drawn to the assistance to be given to the export trade in accordance with the trade treaty between Austria and Hungary, in force from 19 July 1931 until 15 July 1932, the subject being dealt with in a special appendix. In execution of the first part of this a joint council for transport charges was set up. The object of this council was to control and more particularly to lower commercial transport charges as between the two countries (reduction in normal rates). The second part of the appendix made provision in each country for central organisations the function of which was the regulation of the export trade to other countries. These bodies, which were to benefit by exemptions from taxes and by preferences in the matter of distraints, were required to give the exporters in their own country certain credit facilities, including reductions in interest rates. In general (though without any express declaration in this sense), the object was to give a certain preference to the products of the other contracting country. This system however could not work entirely satisfactorily owing to the limitation towards the end of 1931 of the financial means available and to the falling off of imports, which was the result of difficulties in providing for the payment of the imports in question.

It was largely in consequence of these difficulties that the treaty no longer proved satisfactory and notice was given to terminate as on 15 July 1932.

Afterwards an attempt was made openly to adopt preferential treatment, but this policy cannot become operative until after authorisation by the other States which have trade treaties with Austria depending on the most favoured nation clause.

The first treaty concluded on this basis, which came into force on 9 March 1932 was that with Yugoslavia, by which it is agreed that an annual quota of 500,000 quintals of wheat grown in and consigned from Yugoslavia may be imported by Austria on payment of a duty which is 3.20 gold crowns per quintal lower than the general duty on wheat in force for Austrian imports at the date of such importation.

The new treaty with Hungary contains the same provision for the same quantity of wheat and with the same reduction in duty. It is also indicated in this case that, provided there be no opposition from other States with which Austria has concluded a treaty based on the most favoured nation clause, this clause should come into force on 1 July 1933.

#### 4. — BELGIUM AND LUXEMBURG.

(Union Economique Belgo-Luxembourgeoise).

*Introduction.* — In these two countries horticulture plays a very important rôle and agriculture is also generally highly intensive and directed largely toward the transformation of primary products into more refined products, that is to say, by the feeding of beef cattle and the production of dairy products and eggs. At the same time cereals also occupy a very important place ; during the quinquennial period 1923-27 the following were the average areas harvested :—

	Belgium	Luxembourg
Wheat . . . . .	145,300 ha.	10,700 ha.
Rye . . . . .	229,500 »	6,900 »
Barley. . . . .	33,000 »	3,100 »
Oats . . . . .	266,100 »	29,000 »

that is, a total for Belgium of 673,900 ha., 55 %, and for Luxembourg of 49,700 ha., 44 % of the arable area.

At the same time, as human consumption is limited principally to a small percentage of the wheat (which generally is not favoured for breadmaking), and the other cereals are used almost exclusively for stockfeeding, it is evident that, with an extremely dense population, large quantities must be imported. In the Customs Union of Belgium and Luxemburg the production and the import surplus were as follows on the average of the five above-mentioned years (in each case in thousands of quintals) :—

	Production of Belgium	Production of Luxemburg	Import surplus into the Customs Union
Wheat . . . . .	3,807	135	10,893
Rye . . . . .	5,341	90	398
Barley . . . . .	891	40	2,622
Oats. . . . .	6,694	303	1,046
Maize . . . . .	—	—	5,467

It is evident that under these conditions import duties would on the one hand increase the cost of production of animal products and on the other would not prove effective in assisting farmers, who in general employ a large part of their cereals on their own farms, while at the same time the cost of living would increase, as is almost always the case when import duties succeed in raising prices.

Taking this into account, only a very small duty has been levied on flour — a duty, in fact, which protects only the milling industry — and another on oats. These duties consist of a basic duty, which in general does not change, and of a coefficient of majoration, which was increased in accordance with the degree of inflation (the Belgian franc and the belga were stabilised on 26 October 1926) and later with the fall of prices. In this way duties on flour other than oat flour were doubled in 1926 while the duty on oats and oat flour did not change after the coming into force in 1924 of the new law concerning the customs tariff (the first modifications date from 1931 — see A. 1 oats).

In this way the duties at the end of 1930 were:—

Wheat, rye, barley, maize . . . . .	exempt
Oats . . . . .	frs. 6.00 per quintal
Flour, etc. of wheat, rye, barley and maize . .	» 4.00 » »
Meal, etc. of oats . . . . .	» 8.00 » »
Malt . . . . .	» 17.50 » »

Even on oats the duty remains of very small importance, as is seen by the fact that the average price in December 1927 for home-grown oats available at Antwerp was frs. 163.60 per quintal, while that of the same month in 1929 and 1930 respectively was frs. 132.75 and frs. 68.25.

To increase the price of home-grown wheat a special decree, which came into force on 21 January 1930, subjected the import and transit of wheat and wheat flour to a special licence. Later a further decree established as from 27 October 1930 the necessity of producing on imports of rye, barley and oats, as well as of flour, groats, etc. of rye, barley and oats, a special import licence in so far as these products originate in or are consigned from the U. S. S. R.

As regards Luxemburg a law of 31 January 1930 established that a ministerial decree "might fix the minimum percentage of home-grown cereals (wheat, meslin, rye) which the millers.... should compulsorily employ in the manufacture of flour destined for breadmaking and other food uses in the country". Further, "it may also fix the maximum extraction percentage of flours manufactured from home-grown wheat destined to be mixed with foreign flours for the purpose of internal consumption". By a decree coming into force on 11 February following, the minimum percentage of wheat from home-grown cereals was fixed at 15 %, of which 10 % was to be wheat flour and 5 % rye flour, and in the case of pure rye flour destined for breadmaking (and not for mixing) 15 % of home-grown rye flour, while the maximum extraction percentage of the same home-grown flours is fixed at 65 %.

Finally it should be stated that there is a transmission tax levied on imports, which amounted at first (as from 6 March 1927) to 4 % *ad valorem* for whole cereals and flour, etc. of barley, oats and maize and to 1 % for flour, etc. of wheat and rye, to be reduced on 16 July 1930 to 1 % *ad valorem* for wheat, rye and their flours and to 2 % for the other cereals and flours here enumerated. The value on which the tax is calculated includes the import duty.

In the following summary are given (in so far as they have come to the notice of the Institute) all the measures modifying the situation subsequently to 1 January 1931.

#### *Wheat and its derivatives.*

D. 1 (19-3-31) A special permit is necessary for import and transit of wheat, wheat flour, wheat groats and semolina.

B. 1 (26-7-31) Transmission tax changed:—

wheat, rye . . . . .	2 % <i>ad valorem</i>
barley, oats, maize . . . . .	4 % " "
flour and groats of wheat and rye, pearl barley, oat flakes . . . . .	2 % " "
other flours and cereal milling products . . . . .	4 % " "

- A. 1 (27-3-32) Import duties temporarily increased by 15 %: cereal flour other than that of oats: 4.60 francs.
- B. 2 (27-3-33) Transmission tax increased by 10 %, namely, from 2 % to 2.2 % and from 4 % to 4.4 %.
- E. 1 (22-9-32) Wheat flour for breadmaking to contain 10% of homegrown wheat.
- D. 2 (22-9-32) During the period in which wheat flour for breadmaking must contain a percentage of home-grown wheat no import licence to be granted for soft wheat of a kind which might be confused with Belgian wheat or for wheat flour.
- B. 3 (16-1-33) Transmission tax increased from 2.2 % to 2.5 % and from 4.4 % to 5.0 %.

*Rye and its derivatives.*

- B. 1 (26-7-31) See B. 1 wheat.
- A. 1 (27-3-32) See A. 1 wheat.
- B. 2 (27-3-32) See B. 2 wheat.
- B. 3 (16-1-33) See B. 3 wheat.

*Barley and oat derivatives.*

- B. 1 (26-7-31) See B. 1 wheat.
- A. 1 (27-3-32) Duties increased by 15 % :—  
     barley meal. . . . . 4.60 frs.  
     barley malt. . . . . 20.12 »
- B. 2 (27-3-32) See B. 2 wheat.
- B. 3 (1-8-32) Transmission tax on barley, oat and maize meals and barley malt originating in or consigned from France or Canada: 4% *ad valorem* above the tax payable on products of other origin or consignment.
- B. 4 (16-1-33) See B. 3 wheat.

*Oats and oat derivatives.*

- A. 1 (14-3-31) Import duty increased :  
     oats . . . . . 21.00 frs.  
     oat meal, groats, etc. . . . . 28.00 »
- B. 1 (26-7-31) See B. 1 wheat.
- A. 2 (27-3-32) Duties increased by 15 % :  
     oats . . . . . 24.15 Frs.  
     oat meal, groats, etc. . . . . 32.20 »
- B. 2 (27-3-32) See B. 2 wheat.
- A. 3 (1-4-32) Oat groats, semolina and flakes: duty increased to 36.00 francs; temporary supplement of 15 % unchanged: total: 41.40 francs.
- B. 3 (1-8-32) See B. 3 barley.
- B. 4 (16-1-33) See B. 3 wheat.

*Maize and its derivatives.*

- B. 1 (26-7-31) See B. 1 wheat.  
 A. 1 (27-3-32) See A. 1 wheat.  
 B. 2 (27-3-32) See B. 2 wheat.  
 D. 1 (9-6-32) Imports of maize meal and other milling products subject to special licence (Reg. of 10-5-32).  
 B. 3 (1-8-32) See B. 3 barley.  
 B. 4 (16-1-33) See B. 3 wheat.

## 5. — BULGARIA.

Bulgaria is an exporter of cereals. During the quinquennium 1923-1927 production and export surplus were, on the average, as follows (in thousands of quintals): —

	Production	Export Surplus
Wheat . . . . .	9,463	495
Rye . . . . .	1,563	78
Barley . . . . .	2,243	297
Oats . . . . .	996	1
Maize . . . . .	6,128	1,323

In later years, this situation has not greatly changed. From this fact it is evident that the customs duties could only have an influence during brief periods of shortage. They are, however, relatively high. In addition to the customs duties, a number of taxes of different kinds are also levied: —

- (1) Communal tax: 20 % of the customs duty;
- (2) Statistical tax: 2.00 paper levas per quintal;
- (3) Measurement tax: 2.00 paper levas per quintal;
- (4) Loading tax: 0.24 gold levas per quintal;
- (5) Tax credited to the fund for extension, improvement and administration of railway stations and ports: 0.072 gold levas per quintal;
- (6) Franking tax: 3 % of the total sum of all duties, taxes, etc., specified above;
- (7) Franking tax (second tax): 3 % *ad valorem*;
- (8) Processing tax: 1.00 paper leva per quintal.

In the following summary are given the import duties and the total amount of taxes levied at the same time (expressed in paper levas per quintal): —

	Import duty	Taxes levied on imports
Wheat . . . . .	162	49
Rye . . . . .	162	49
Barley . . . . .	135	42
Oats . . . . .	162	48
Maize . . . . .	162	48
Wheat flour and rye flour . . . . .	324	83



The disastrous fall in wheat prices in 1930 induced the Bulgarian Government to establish, by a law of 25 December 1930, a Department for the Purchase of Bread Cereals and Fodder Cereals for National Requirements and for Export, which had the following objects: (a) to check, if possible, the fall in the prices of cereals and to render them more remunerative; (b) to diminish, as far as possible, the accumulated stocks of unsold cereals; (c) to reduce the farmer's burden of fiscal charges, *e. g.*, by part payment for cereals purchased by means of coupons valid for the payment of taxes.

For many reasons this organisation has not been able to give completely satisfactory results, so that it has been necessary to modify and complete the law, especially by the new measure of 12 October 1931, which, while introducing monopolies for the wheat and rye trades, has completely freed the maize trade, introducing for the latter a premium on exports. In its new form the organisation was in a position to regulate internally the prices of cereals coming under the monopoly and thus to reduce its losses considerably.

Lastly, on 1 July 1932, the law was again revised. The regulations in force from this date onward are as follows: The State continues to fix prices with the intention of maintaining them above those on the free market; the wheat and rye trade monopolies are abolished; in the purchase of cereals the Department may be aided not only by the cooperative societies, but also by private traders chosen *ad hoc*.

Finally two recent measures, based in part on financial criteria, should be indicated: first, a restriction of exports of cereals and cereal flours in accordance with the regulations enforced by the importing countries, and making obligatory a special export licence in cases of shipments to countries, in which the National Bank of Bulgaria has not freely available the sums due in payment of these products; second, a regulation also restricting imports by prescribing that they are subject to the production of a special licence from the said Bank, to be given only for 50 % of the imports during the year 1931.

Bulgaria, like the other Danubian countries, has attempted to obtain preferential duties for its cereal exports. See under Germany (§ 2).

## 6. — DENMARK.

Denmark is amongst the Free Trade countries which have always found it advantageous to allow the free import of cereals for transformation within the country into dairy products, beef, pork, bacon and eggs. The figures of production and of import surplus for the period 1923-27 give a clear idea of the situation, which, from this point of view, has not subsequently changed (in thousands of quintals):—

	Production	Import surplus
Wheat. . . . .	2,321	2,133
Rye. . . . .	3,158	1,879
Barley. . . . .	7,521	610
Oats. . . . .	9,096	231
Maize . . . . .	—	4,872

The situation is altogether different from that of the Netherlands in that in the latter country permanent meadows are of very great importance, while in Denmark cattle must be fed principally on the products of arable land. The preponderance of oats and barley may be explained in great part by this fact. As a large part of the other cereals also do not leave the farm where they are grown customs duties can have no other effect than an increase in the cost of animal production.

The only limitation to import is the result of the precarious situation of the trade balance, which, since the inflation of September 1931, has been somewhat aggravated. For this reason restrictions on the imports of certain products above 100 % of the import value of the same products in 1931 have been issued. Up to 6 April 1933, this regulation did not refer to whole cereals but only to flour. From that date whole cereals are also included.

Measures of assistance for particular crops have not been undertaken as regards cereals. For this reason it is important to note that Denmark is the only cereal importing country of Europe where at present such conditions exist, resulting in an increase in the area under greenfodder crops, roots, etc. and in a diminution of area under cereals. The reduction is the smallest for wheat, this being explained by the difference in prices that generally has prevailed in recent years. The following table gives the figures in recent years in thousands of ha. :—

Years	All cereals together	Wheat	Rye	Fodder crops
1927. . . . .	1,294	111	183	1,092
1928. . . . .	1,306	102	146	1,108
1929. . . . .	1,321	104	152	1,061
1930. . . . .	1,318	101	149	1,115
1931. . . . .	1,295	105	134	1,129
1932. . . . .	1,282	99	120	1,131

#### 7. — SPAIN.

Spain is a country which, as regards cereal cultivation, is almost self-supporting. Only wheat and barley are of great importance, as will be seen from the area harvested on the average in the five years 1923-27.

Wheat . . . . .	4,305,000 ha.
Rye . . . . .	741,000 »
Barley . . . . .	1,799,000 »
Oats . . . . .	712,000 »
Maize . . . . .	457,000 »

a total of 8,014,000 ha., that is to say half of the arable land but only a fifth of the cultivated area.

During the same period production practically covered internal consumption, as shown below (in thousand quintals):—

	Production	Import (+) or export surplus (—)
Wheat . . . . .	39,893	+ 136
Rye . . . . .	6,821	+ 1
Barley . . . . .	21,032	— 54
Oats . . . . .	5,543	—
Maize . . . . .	6,159	+ 3,394

The external trade in oats, which is of very small importance, is not recorded separately but together with that of "other cereals".

The agrarian structure of the country is such that the cereals mentioned here are cultivated principally in the very large holdings. Yields are generally rather small under such conditions. The only exception is maize and it is this crop particularly that has in recent years been improved.

In any case the tariff situation for a long time has not permitted the import of cereals except in times of great scarcity. In addition, a law published on 21 May 1930 further laid down that the import of wheat and wheat flour was to be prohibited as long as the price of that cereal on the regulating markets of Castile were not above 53.00 pesetas (legal currency), while the import of maize was already prohibited by decree on 11 January of the same year. Imports of maize were allowed again from 27 August 1930.

The minimum duties, i. e., those applicable to imports originating in and consigned from countries which have a treaty of commerce with Spain are as follows :—

Wheat. . . . .	14.00 pesetas per quintal
Rye and barley . . . . .	12.00   "   "   "
Maize . . . . .	10.00   "   "   "
Oats (under "other cereals"). . . . .	8.00   "   "   "
Wheat flour . . . . .	21.00   "   "   "
Flour of other cereals. . . . .	9.00   "   "   "

The maximum duties are treble or quadruple the minimum duties.

Of the duties 25 % is levied in gold pesetas or in equivalent currency, 75 % in paper pesetas with a supplement fixed every 10 days.

The modifications of the customs duties as well as of other stipulations are given in the following summary so far as they have come to the knowledge of the Institute :—

#### *Wheat in the grain.*

- E. 1 (16-7-31) Control of the trade in wheat and wheat flour to be maintained for a further year. Prices of sound wheat to fluctuate between pesetas 46 and pesetas 53 per quintal.
- G. 1 (13-4-32) Import of a quota of 500,000 quintals of whole wheat authorized. Each shipment to be accompanied by a special import licence.

- A. 1 (13-4-32) Import duties to be fixed every ten days in accordance with internal prices. First level: pesetas 8.50.
- A. 2 (21-4-32) Duty: pesetas 8.00.
- C. 2 (30-4-32) Import of a further quota of 1,000,000 quintals permitted under conditions indicated under C. 1.
- A. 3 (1-5-32) Duty: pesetas 5.50.
- A. 4 (11-5-32) Duty: pesetas 5.75.
- A. 5 (21-5-32) Duty: pesetas 6.00.
- C. 3 (27-5-32) Import of a further quota of 1,000,000 quintals permitted under conditions indicated under C. 1.
- C. 4 (16-6-32) Import of a further quota of 250,000 quintals permitted under conditions indicated under C. 1.
- A. 6 (1-7-32) Duty: pesetas 6.50.

*Rye, barley, oats.*

No information.

*Maize in the grain.*

- A. 1 (7-11-31) Duty: pesetas 7.00.
- A. 2 (3-4-32) Duty: pesetas 5.00.
- A. 3 (28-5-32) Duty: pesetas 7.00.
- A. 4 (1-7-32) Duty: pesetas 8.00.  
Duty to be fixed every ten days.
- A. 5 (11-7-32) Duty: pesetas 7.50.
- A. 6 (1-8-32) Duty: pesetas 7.00.
- A. 7 (11-9-32) Duty: pesetas 7.50.
- A. 8 (21-9-32) Duty: pesetas 8.50.
- A. 9 (1-1-33) Duty: pesetas 9.00.
- A. 10 (11-1-33) Duty: pesetas 8.50.
- A. 11 (11-2-33) Duty: pesetas 9.00.
- D. 1 (8-5-33) Imports subjected to special licence. The object of this measure is to prevent too great an influx at the moment that 450,000 quintals of Argentina maize have to be imported as against an export of Spanish rails to Argentina.
- A. 12 (11-5-33) Duty: pesetas 6.75.
- A. 13 (21-5-33) Duty: pesetas 6.70.
- A. 14 (1-6-33) Duty: pesetas 6.75.
- A. 15 (11-6-33) Duty: pesetas 6.80.
- A. 16 (1-7-33) Duty: pesetas 6.70.

# 8. — ESTONIA.

Owing to its climate, the nature of its soil and its geographical conditions, the territories which now form the Estonian Republic were already before the war specialised on livestock production. Although the military forces passing through the Baltic Provinces destroyed a large part of the equipment and livestock and the land reforms in the new States had at first a somewhat unfavourable influence on the normal development of these industries, the situation changed later and the Baltic States are now exporters of a number of animal products.

It is in accordance with this situation that for a long time the import of fodder cereals was free or subject only to a very low duty. For wheat, on the contrary, it was desired, as in the other Baltic Republics and also in many other States, both of recent formation and of older origin, to become as independent as possible of other countries. This desire was, without doubt, explicable in view of the very precarious financial situation of the country.

At the end of 1928 the import duties were as follows, expressed in gold francs per quintal (1 gold franc = 0.73 Estonian crowns) :—

Cereals in the grain, other than wheat . . . . .	free
Wheat . . . . .	gold frs. 10.00
Flour of all kinds . . . . .	» » 15.00

In 1930, however, in view of the agricultural depression, the necessity was felt to assist cereal producers. At first there was instituted a monopoly for rye and rye-flour (in force as from 19 July 1930), which consisted primarily in the purchase of rye from the producers at a fixed remunerative price. In addition the Government caused to be imported by private persons under special conditions the quantities of rye of which it had need. The Government obtained at the same time the right to organise a monopoly for wheat but in 1930 it limited itself to an increase in the relative duties (7 November), while those for barley and flour other than wheat flour had been already modified on 22 July.

These duties in gold francs are reduced as from 20 July 1931 into terms of Estonian crowns and at the same time increased or rounded off. The situation previous to 1931 and that on 20 July 1931 are given below :—

	Gold francs 1930	Estonian crowns 20-7-31
Wheat . . . . .	15.00	11.00
Rye . . . . .	exempt	exempt
Barley . . . . .	10.00	7.50
Oats . . . . .	exempt	2.00
Maize . . . . .	»	5.00
Bolted wheat flour . . . . .	32.00	29.00
Unbolted wheat flour . . . . .	25.00	18.00
Flour, etc. of rye . . . . .	9.00	5.00
Flour, groats and barley malt . . . . .	20.00	15.00
Flour, etc. of oats . . . . .	9.00	15.00
Maize flour . . . . .	9.00	15.00

The duty on bolted wheat flour was already increased on 12 March 1931 to gold francs 37.00 (Estonian crowns: 27.01). On 24 March 1931 a commercial treaty with Lithuania entered into force, according to which shipments of wheat of that origin and consignment are admitted with a preferential reduction of 20 % on the minimum duty (Baltic clause).

The power of setting up a monopoly for wheat also was utilised in 1931 only in order that a contract might be arranged with the millers of the country. By the terms of this contract the Government undertook to maintain a high duty on wheat and a very considerable margin between this duty and that on flours, while on their part the millowners covenanted to purchase all the native wheat tendered to them up to 15 September at a favourable price and also not to change the price of wheat flour.

All these measures were still considered insufficient so that, in order better to regulate the internal market, the Government took over as from 11 November 1931 the import monopoly of all cereals and their products. The monopoly for rye, which is of an internal character, is not affected by this regulation. Under this form of monopoly the importers may continue themselves to import within the limits to be fixed by the Government and under special conditions. Maize was exempted from such restriction on 22 June 1932, but only after the duty had been increased on 2 June to Estonian crowns 20.00.

As from 25 April 1931 there also exists in Estonia a form of import certificate, inasmuch as the mills have the right to import without payment of import duties 145 kg. of whole wheat for each quintal of bolted wheat flour which they have exported during the preceeding year.

#### 9. — FINLAND.

The situation of this country, from the point of view of its agricultural structure and the nature of its development, greatly resembles that of Estonia, though it should be added that the importance of cereal crops is still more limited. For this reason livestock are fed much more than in other countries with the products of fodder crops, which alone cover almost half of the arable land.

The attempt has been made in Finland also to make the country as independent as possible of foreign supplies. For this reason the tariff of 1921 contained these somewhat high duties, given in each case in Finmarks per quintal:—

Wheat . . . . .	75
Rye and barley . . . . .	25
Oats . . . . .	5
Maize . . . . .	5
Unsifted wheat flour . . . . .	95
Sifted or granulated wheat flour . . . . .	120
Unbolted rye flour . . . . .	35
Bolted rye flour . . . . .	40

These duties, partly for fiscal reasons, are revised each year, but remained the same for the above products until the end of 1928. On 1 January 1929

they were considerably increased and other increases are to be noted for 1 January of the following years. The changes have been as follows:—

	1-1-29	1-1-30	1-1-31	1-1-32	1-1-33
Wheat . . . . .	—	100	—	125	130
Rye . . . . .	50	75	125	—	—
Barley . . . . .	50	75	100	—	—
Oats . . . . .	15	25	—	—	—
Maize . . . . .	exempt	—	—	—	—
Unsifted wheat flour . . . .	100	125	—	150	—
Sifted wheat flour, etc. . . .	120	150	210	250	—
Unbolted rye flour . . . . .	65	90	145	—	—
Bolted rye flour . . . . .	95	130	225	—	—

It must further be added that from 1931 onward the duty on rye and rye flour has been fixed each quarter in relation to the price of imported rye so that when imported rye costs not more than Fmk. 125 per quintal the duties are those indicated above (maximum duties). When the price, which is fixed in advance on the basis of the then existing situation, is from Fmk. 126 to Fmk. 150 (which occurred only during the second and third quarters of 1932), the duties amount respectively to Fmk. 100, 120 and 190, and with higher prices, the duties are reduced to Fmk. 75, 95 and 150.

During the period 25 October to 31 December 1932 a duty of Fmk. 20 was levied on maize; the duty of Fmk. 250 levied in 1932 and 1933 on sifted wheat flour may be reduced under special conditions to Fmk. 150 in the case of imports for the manufacture of macaroni.

As a measure of internal character the resolution of 30 September 1931, concerning the establishment of a milling percentage for home-grown rye, the percentage of consumption for home-grown oats and the percentage of mixture for flour of home-grown rye, may be mentioned. As from 1 October the milling percentage for home-grown rye was established at 30 %, the consumption percentage for home-grown oats at 70 % and the percentage of mixture for flour from home-grown rye at 30 %. These percentages have been subsequently modified on several occasions.

Finally it must be mentioned here that, according to the law of 29 December 1928, on the export of fowls' eggs or of pork and bacon (in each case exclusively products inspected for quality), import certificates are delivered, which may be employed for the payment of customs duties on the same products, as well as on rye and barley. These certificates, which are valid for 6 months, may be given only to cooperative organisations. They are valid for a total equivalent to the minimum duties to be paid if the exports had been made at the time of importation. From 22 April 1931 it is also possible with the same certificates to pay the duties on rye flour and barley flour.

## 10. — FRANCE.

*Introduction.* — In France the agricultural economy is based largely on cereal production. On the average for the period 1923-1927 the areas of the respective cereal crops harvested were as follows:—

Wheat . . . . .	5,439,000 ha.
Rye . . . . .	845,000 »
Barley . . . . .	698,000 »
Oats . . . . .	3,473,000 »
Maize . . . . .	343,000 »

that is, for the five most important cereals (amongst which wheat and oats have an absolute preponderance), a total of 10,798,000 ha. or nearly 20 % of the total area of the country and nearly 49 % of the arable land. It should be noted also that for all of these products there is a surplus of imports, which is considerably reduced, however, in the event of a large crop, especially in the case of wheat. Since 1892 the Government has pursued the clearly defined policy of protecting home agriculture against low priced foreign products and this tradition was intensified when imports from the large cereal-exporting countries brought the danger that prices might fall below cost of production. After the stabilisation of the French franc (25 June 1928), customs duties for most products were still comparatively low. They were as follows for cereals in the grain (in francs per quintal): wheat: 35.00; rye: 15.00; barley: 15.00; oats: 15.00; maize: 10.00. For wheat flour there are three categories according to bolting percentages, the first comprising flour bolting 70 % and over, the second flour bolting 60 % to 70 %, and the third flour bolting 60 % and under. The duties were respectively 60.00, 72.00 and 80.00 francs per quintal. For the other kinds of flour and meal the duties were 30.00 francs per quintal for rye flour, 25.00 for barley meal, 22.50 for oat meal and 18.00 for maize meal.

In 1929 wheat prices, which generally tend to rise at the end of a trade season, began, on the contrary, to fall owing to the decline on the large free import markets, necessitating the provisional increase for two months (commencing May 24) of the customs duties on wheat to 50.00 francs and of those on wheat flours to 80.00, 100.00 and 115.00 francs per quintal.

The wheat crop of 1929 was very heavy, reaching 91,786,000 quintals or 20 % above the average of the preceding six years. This resulted in a further fall in France, whereas no corresponding movement was recorded on the Liverpool and London markets. A different type of measure became necessary and was introduced in the law of 1 December 1929 on the wheat trade. By this law it could, by decree, "be fixed what *minimum* percentage of home-grown wheat the millers must compulsorily employ in the manufacture of flour to be used exclusively in the making of bread or other foodstuffs". The law also provides for "fixing by decree the bolting limits of bread flours for home consumption". On the basis of this law the minimum percentage of home-grown wheat to be used in the manufacture of flour for breadmaking was fixed at 97 as from 5 December onwards.



The same law also stipulates that under certain conditions and after a period of 3 months from the passage of the law, exported wheat, « whether transformed or not into flour, will confer a claim to a reimbursement of customs duties ». Further legislation maintained this provision up till 31 July 1930 and additional funds up to 200,000,000 francs were assigned.

A law, dated 30 April 1930, empowers the Minister of Agriculture within the limits of a credit of 30 million francs, to incur the expenditure necessary to maintain a reserve stock of wheat and flour to ensure the proper feeding of the population.

Owing, however, to the fall in wheat prices on the large import markets since the beginning of 1930, French prices also could no longer be maintained.

A special measure taken against Australia, with which France had no commercial treaty at the time, had very little practical effect. As from 17 January 1930 wheat and wheat flour originating in or consigned from Australia, are, apart from the duties of the general tariff, called on to pay a surtax, equivalent to a double rate of duty.

For oats the situation, after the crop of 1929, also became grave; on the key markets a tendency to fall had already been evident since the crop of 1928 and when, in 1929, France had a very heavy oat crop, prices fell abruptly despite the customs duty. This duty was fixed in the commercial treaty with Czechoslovakia (which entered into force on 24 April 1929), but on condition that an increase might take place in the event of a change of more than 20 % in the official index numbers of wholesale prices as compared with those of July 1928. This actually took place in January 1930, with the result that, as from the 19 January, the duty on oats was increased to 21.00 francs.

On 20 May 1930 the duties on wheat and wheat flours were radically increased; wheat to 80.00 francs and wheat flours to 128.00, 160.00 and 185.00 francs.

For barley a condition of the same character as for oats was fixed in the treaty with Czechoslovakia. In this case an increase (to 21.00 francs) could be enforced on 19 July 1930 together with a new change in the oats duty to 30.00 francs, while for rye also the duty was brought up to 21.00 francs. On each occasion the duties on meal, crushed grain and bran meal containing not more than 10 % of flour were increased in proportion.

The 1930 wheat crop, in contrast to that of 1929, was very poor, amounting to only 62,081,000 quintals, 66 % of the preceding crop. For this reason it was necessary on 26 July, directly after the harvest to lower to 90 % the minimum percentage of home-grown wheat for the manufacture of flour to be used in bread-making. Since this date wheat prices have been successfully maintained at a very high level for two years, thanks to the customs duties and the regulation of the composition of flour for breadmaking.

The duty on maize was increased as from 12 September 1930 to 24.00 francs. It should further be stated that, under the new French-Rumanian commercial treaty, which entered into force provisionally on 15 September of the same year, on an annual quota of at least 800,000 quintals of small grain maize, yellow in colour, having the characteristics of the so-called Bessarabian maize and destined for the feeding of livestock, including poultry, a reduction of 30 % in the

minimum duty was arranged, so that this duty amounted to 16.80 francs only. A decree enforced on 5 December fixes the amount for the last quarter of 1930 at 200,000 quintals.

A further characteristic of the French customs tariff is that it is in two columns, the first containing the general and the second the minima duties. For cereals these two duties remained the same up to 14 July 1931 (see A. 1 wheat) except for malt (whether whole or as flour) for which the minimum duty was 15 % *ad valorem* and the general duty was double. General duties were applicable only to products originating in or consigned from countries, which have no commercial treaty with France on the basis of the most favoured nation clause. From 1928 to 1932 the situation as regards cereals was as follows, only the chief cereal exporting countries being here cited.

Countries	Products	Duties
Bulgaria . . .	Whole cereals . . . . .	minima
» . . .	Flours, etc. . . . .	general
Hungary . . .	All products. . . . .	minima
Poland . . .	Barley in grain . . . . .	minima
» . . .	Crushed barley, malt. . . . .	minima
» . . .	Other cereals, flours, etc. . . . .	general
Rumania . . .	All products. . . . .	minima
Yugoslavia . .	All products. . . . .	minima
Czechoslovakia	Cereals, flours, etc. . . . .	minima
Canada . . .	Malt . . . . .	intermediary (21 % <i>ad val.</i> )
» . . .	Other cereals, flours, etc. . . . .	minima
United States	Wheat and maize, also their flours and baking products. . . . .	minima
» »	Other cereal, flours, etc. . . . .	general
Argentina . .	All products. . . . .	general
India . . .	Cereals, flours, etc. . . . .	general
Australia . .	All products. . . . .	general

It should be added that, as regards Czechoslovakia previous to 1929 and as regards Hungary previous to 1930, theoretically the situation was less favourable, a considerable part of these products being classed under the general tariff.<sup>4</sup>

Finally, it should be noted with respect to the French commercial system, that imports of cereals originating from the French Colonies and African Territories under French mandate, are free, on condition of direct import and production of a certificate of origin; this is of particular importance in the case of maize imports. Algeria, as regards a large part of French law, including that relating to foreign trade, forms an integral part of France, so that, for all products, its trade with the latter is free. For Tunis also cereals are exempt from the payment of duty. For the French zone of Morocco, exemption from customs duty is limited to certain quantities of specified products. These quotas, which are fixed annually for the period 1 June-31 May and refer to

total imports into France and Algeria, were as follows (in thousands of quintals):—

	1929-30	1930-31
Wheat . . . . .	1,700	1,200
Rye . . . . .	5	5
Barley . . . . .	3,000	3,000
Oats . . . . .	250	250
Maize . . . . .	600	600
Hard wheat flour and groats . . . . .	100	100

Taking into consideration the quantities admitted free of duty and originating from the countries named above, the following table is obtained, in which column A contains the imports from the French Colonies, Protectorates, etc., and column B those from foreign countries (in thousands of quintals) :

	1929		1930	
	A	B	A	B
Hard wheat . . . . .	1,990	131	2,146	608
Soft wheat . . . . .	1,441	10,557	2,204	5,399
Rye . . . . .	15	179	13	214
Barley . . . . .	59	1,101	457	1,077
Oats . . . . .	698	613	665	19
Maize . . . . .	1,682	6,511	1,109	7,001
Wheat flour . . . . .	119	27	241	16

(The imports of flour and meal of the other cereals named are unimportant).

Besides the duty an import tax is also levied, amounting to 2 % *ad valorem*, based on price plus import duty.

After this brief account the situation as on 1 January 1931 may be thus summarised. The tariff barrier was already fairly high, especially for wheat. The price of this cereal was, moreover, protected by regulations as to the minimum proportion of home-grown wheat to be employed in the manufacture of flour for breadmaking.

In the following notes are given, in chronological order, the most important measures, in so far as they are known to the Institute, taken to influence prices.

#### *Wheat and its derivatives.*

- E. 1 (15- 4-31) Minimum proportion of home-grown wheat for breadmaking 90 %.
- E. 2 (18- 4-31) Minimum proportion of home-grown wheat for breadmaking 80 %.
- E. 3 (28- 4-31) Minimum proportion of home-grown wheat for breadmaking 75 %.
- E. 4 (17- 6-31) Minimum proportion of home-grown wheat for breadmaking 70 %.

E. 5 (1-7-31) Minimum proportion of home-grown wheat for breadmaking 75 %.

C. 1 (3-7-31) Quota for imports into France or Algeria for the period 1-6-31 to 31-5-32 of products originating in and consigned from the French zone of Morocco :—

Wheat: 1,700,000 quintals of which: in the period 1-6 to 31-8: 534,000 quintals; in the period 1-9 to 30-11: 780,000 quintals; in the period 1-12-31 to 31-5-32: 386,000 quintals.

Hard wheat flour and groats: 100,000 quintals.

E. 6 (4-7-31) Minimum proportion of home-grown wheat for breadmaking 80 %.

E. 7 (10-7-31) Minimum proportion of home-grown wheat for breadmaking 85 %.

A. 1 (14-7-31) The minimum duties not changed but the maximum duties, which hitherto had been equal to the minimum duties, were doubled. (See introduction).

E. 8 (25-7-31) Minimum proportion of home-grown wheat for breadmaking 90 %.

E. 9 (15-8-31) The types of soft wheat flour and hard wheat flour bolting 90 % are abolished.

E. 10 (1-9-31) The types of soft wheat flour and hard wheat flour bolting 80 % are abolished.

A. 2 (25-9-31) 10 % of the total quantity of wheat to be imported into France during each commercial season is to be purchased in Hungary at the world price and to be subject, without reduction, to the minimum tariff rate. The Hungarian Government will be remitted a sum taking into account a remunerative price for this wheat, but not exceeding 30 % of the customs duty.

D. 1 (11-11-31) For all imports of foreign flour the production of a nominative and non-transferable import licence is necessary, mentioning the quantity for which it is valid; these stipulations do not apply to denatured wheat not for human consumption.

B. 1 (15-11-31) Surtax to compensate for exchange variations weighing on imports of commodities originating in or consigned from countries having depreciated currencies (only countries interested in the trade in cereals with France):—

Great Britain . . . . .	15 %	<i>ad valorem</i>
Argentina . . . . .	10 %	»
India . . . . .	7 %	»
Australia . . . . .	15 %	»

(This surtax does not apply to the shipment of wheat in the grain).

E. 11 (25-11-31) Minimum proportion of home-grown wheat for breadmaking 97 %.

- B. 2 (10-12-31) Surtax to compensate for exchange variations weighing on imports of commodities produced in or consigned from countries having depreciated currencies (modifications and additional surtaxes):—

Canada . . . . .	11 %	<i>ad valorem</i>
Argentina . . . . .	15 %	» »
India . . . . .	15 %	» »

- E. 12 (31- 1-32) Minimum proportion of home-grown wheat for breadmaking 90 %.

- E. 13 (10- 2-32) Minimum proportion of home-grown wheat for breadmaking 85 %.

- E. 14 (13- 2-32) Minimum proportion of home-grown wheat for breadmaking 80 %.

- D. 2 (17- 2-32) For all imports of foreign wheat flour the production of a nominative and non-transferable import licence is necessary, mentioning the quantity for which it is valid.

- E. 15 (25- 2-32) Minimum proportion of home-grown wheat for breadmaking 75 %.

- E. 16 (15- 3-32) Minimum proportion of home-grown wheat for breadmaking 70 %.

- E. 17 (20 -3-32) Minimum proportion of home-grown wheat for breadmaking 65 %.

- E. 18 (27- 3-32) Minimum proportion of home-grown wheat for breadmaking 60 %.

- B. 3 ( 1- 4-32) Import taxes :—

Cereals in the grain . . . . .	2 %	<i>ad valorem</i>
Cereal flour and crushed cereals .	4 %	» »

- E. 19 ( 2- 4-32) Minimum proportion of home-grown wheat for breadmaking 55 %.

- C. 2 ( 3- 4-32) Additional quota, to be imported into France or Algeria in the period 1-6-31 to 31-5-32, of products originating in and consigned from the French zone of Morocco :—

Soft wheat. . . . .	60,000 quintals
Hard wheat . . . . .	150,000 »

- A. 3 ( 7- 5-32) 10 % of the total quantity of wheat which must be imported into France in each commercial year to be purchased in Yugoslavia at the world price and subject, without reduction, to the minimum tariff rate. The Yugoslavian Government will be remitted such a sum as to allow a remunerative price for this wheat but not exceeding 30 % of the customs duty.

- E. 20 ( 8- 5-32) Minimum proportion of home-grown wheat for breadmaking 60 %.

- A. 4 (24- 5-32) 10 % of the total quantity of wheat which must be imported into France in each commercial year to be purchased in Rumania at the world price and subject, without reduction, to the minimum tariff rate. The Rumanian Government will be remitted a sum, as to allow a remunerative price for this wheat but not exceeding 30 % of the customs duty.
- E. 21 (25- 5-32) Minimum proportion of home-grown wheat for breadmaking 55 %.
- E. 22 (28 -5-32) Minimum proportion of home-grown wheat for breadmaking 50 %.
- C. 3 ( 4- 6-32) Quota to be imported into France or Algeria in the period 1-6-32 to 31-5-33 of products originating in and consigned from the French zone of Morocco :—
- |                                       |                    |
|---------------------------------------|--------------------|
| Soft wheat . . . . .                  | 1,650,000 quintals |
| Hard wheat . . . . .                  | 150,000    »       |
| Hard wheat flour and groats . . . . . | 60,000     »       |
- E. 23 (17- 6-32) Minimum proportion of home-grown wheat for breadmaking 55 %.
- E. 24 ( 1- 7-32) Minimum proportion of home-grown wheat for breadmaking 65 %.
- E. 25 (10- 7-32) Minimum proportion of home-grown wheat for breadmaking 75 %.
- A. 5 (22-7-32) The commercial treaty with Canada having come to an end, the entry into France of shipments originating in or consigned from Canada on payment of the minimum customs duty will not be permitted, unless these shipments have been made before 17 June 1932. Subsequently: general duty (See A. 1).
- E. 26 ( 2- 8-32) Minimum proportion of home-grown wheat for breadmaking 85 %.
- E. 27 ( 4- 8-32) Minimum proportion of home-grown wheat for breadmaking 97 %.
- E. 28 (28- 9-32) The bolting percentage of bread flours not to exceed 66 %.
- E. 29 ( 3-12-32) Minimum percentage of home-grown wheat for breadmaking: 99 %.
- E. 30 (14-12-32) Provisions relating to bolting percentage for flours at 66 % provisionally abolished.
- E. 31 (10-2-33) The Commissariat Department is charged with the purchase before 31-5-33 of home-grown wheat up to the value of 300 million francs in order to form a reserve stock. The prices to be paid are those of the official quotation for spot wheat on the free market of Paris (reg. of 9-2-33 based on law of 26-1-33).
- E. 32 (9-3-33) The price to be paid for wheat for the building up of stocks fixed at frs. 115.00 per quintal (The average price on the Paris market for the month of March was frs. 99.75).
- E. 33 (27-3-33) Minimum proportion of home grown wheat for breadmaking 100 %.
- B. 4 (20- 3-33) Surtax to compensate for exchange variations weighing on imports of commodities originating in or consigned from countries having depreciated currencies (new surtaxes) :—
- |                                 |      |                   |
|---------------------------------|------|-------------------|
| U. S. S. R. . . . .             | 25 % | <i>ad valorem</i> |
| Union of South Africa . . . . . | 15 % | »     »           |

- A. 6 (10-4-33) System of regulation of drawbacks on part of import duties on Hungarian wheat (see A. 2) abrogated.
- E. 34 (16-4-33) A new credit for 20,000,000 frs. was placed at the disposal of the Government to encourage the use of wheat for objects other than human consumption or the making of alcohol.
- C. 4 (1-6-33) Quota to be imported into France or Algeria during the period from 1-6-33 to 31-5-34 of products originating in or coming from the French zone of Morocco :

Soft wheat . . . . .	1,650,000 quintals
Hard wheat . . . . .	150,000    "
Hard wheat flour and groats . . . . .	60,000    "

to be distributed during the year as follows: soft wheat: from 1-6 to 31-8: 640,000 quintals; from 1-9 to 30-11: 505,000 quintals; from 1-12-33 to 31-5-34: 505,000 quintals.

Hard wheat: from 1-6 to 31-8: 60,000 quintals; from 1-9 to 30-11: 45,000 quintals; from 1-12-33 to 31-5-34: 45,000 quintals.

- A. 7 (10-6-33) New provisional treaty with Canada. Whole wheat and its flours originating in and consigned from Canada will benefit on their entry into France from minimum duties (increased by the compensatory surtax of 11 % *ad valorem*); as regards other cereals the general tariff is still applicable.

*General note on wheat.* — During the whole period when the import trade in wheat and wheat flours was so limited the most important factor in establishing prices was the size of the national harvest. Although a comparison between average prices during the trade year and the size of the harvest from the beginning of the same year cannot supply an exact idea of the price movement by reason of the fact that the influence of the coming harvest is already making itself felt, the following summary table is at any rate instructive.

	Harvest for the year (in thousands of quintals)	Average price during the year as follows (in francs per quintal)
1927 . . . . .	75,150	162.00
1928 . . . . .	76,554	155.35
1929 . . . . .	91,786	139.40
1930 . . . . .	62,081	175.00
1931 . . . . .	71,882	167.10
1932 . . . . .	90,182	108.15 (11 months)

*Rye and its derivatives.*

- A. 1 (29-4-31) Import duty:—
- |                            |                        |
|----------------------------|------------------------|
| rye in the grain . . . . . | 35.00 frs. per quintal |
| rye flour . . . . .        | 70.00   "   "   "      |
- C. 1 ( 3-7-31) Quota to be imported into France or Algeria during the period 1-6-31 to 31-5-32 of rye in the grain originating in and consigned from the French zone of Morocco : 5,000 quintals.

- A. 2 (14- 7-31) See A. 1 wheat.
- B. 1 (15-11-31) See B. 1 wheat.
- B. 2 (10-12-31) See B. 2 wheat.
- D. 1 (17- 2-32) See D. 2 wheat.
- B. 3 ( 1- 4-32) See B. 3 wheat.
- A. 3 (22- 7-32) See A. 5 wheat.
- C. 2 ( 3- 8-32) Quota to be imported into France or Algeria during the period 1-6-32 to 31-5-33 of rye in the grain originating in and consigned from the French zone of Morocco : 5,000 quintals.
- A. 4 (17- 9-32) Import duty :—
  - rye in the grain . . . . 40.00 frs. per quintal
  - rye flour . . . . . 80.00 " " "
- B. 4 (20- 3-33) See B. 4 wheat.
- C. 3 (1-6-33) Quota of whole rye for importation into France or Algeria during the period from 1-6-33 to 31-5-34, originating in or consigned from the French zone of Morocco : 5,000 quintals.

*Barley and its derivatives.*

- C. 1 ( 3- 7-31) Quota to be imported into France or Algeria during the period 1-6-31 to 31-5-32 of whole barley originating in and consigned from the French zone of Morocco : 3,000,000 quintals.
- A. 1 (14- 7-31) See A. 1 wheat.
- B. 1 (15-11-31) See B. 1 wheat.
- B. 2 ( 2- 2-31) Anti-dumping duty on malted barley (whole and meal) produced in or consigned from Germany: 80.00 francs per quintal (the import duty on these products is 15 % *ad valorem*).
- B. 3 (10-12-31) See B. 2 wheat.
- B. 4 ( 1- 4-32) Import taxes :—
  - Barley, in the grain . . . . . 2 % *ad valorem*
  - Barley meal and crushed barley . 4 % " "
  - Malted barley, whole . . . . . 2 % " "
  - Malted barley, meal . . . . . 4 % " "
- A. 2 (22- 7-32) See A. 5 wheat.
- C. 2 ( 3- 8-32) Quota to be imported into France or Algeria during the period 1-6-32 to 31-5-33 of whole barley originating in and consigned from the French zone of Morocco : 3,000,000 quintals.
- B. 5 (20- 8-32) Anti-dumping duty on malted barley meal originating in or consigned from Germany : abrogated.
- B. 6 (31- 8-32) Anti-dumping duty on malted barley (whole and meal) originating in or consigned from Czechoslovakia : 30.00 francs per quintal.



- C. 3 (17- 9-32) Imports of whole barley and barley meal subject to quota for the period from 22-9-32 to 31-12-32:—
- |                               |                  |
|-------------------------------|------------------|
| Barley in the grain . . . . . | 262,000 quintals |
| Barley broken, etc. . . . .   | 135    »         |
| Barley meal. . . . .          | 250    »         |
- C. 4 (27-10-32) Provisional quota for malt imports for the period from 27-10-32 to 27-11-32:—
- |                      |                 |
|----------------------|-----------------|
| whole malt . . . . . | 12.859 quintals |
| malt flour. . . . .  | 8 quintals      |
- A. 3 (27-11-32) Import duties (minima):—
- |                               |                        |
|-------------------------------|------------------------|
| malted barley, whole. . . . . | 40.00 frs. per quintal |
| malted barley meal. . . . .   | 60.00    »    »    »   |
- C. 5 ( 1- 1-33) Quota for the first quarter of 1933:—
- |                               |                  |
|-------------------------------|------------------|
| Barley in the grain . . . . . | 225,000 quintals |
| Barley broken, etc. . . . .   | 110    »         |
| Barley meal . . . . .         | 205    »         |
- B. 7 ( 8- 3-33) Anti-dumping duty on malted barley whole originating in or consigned from Germany: reduced to 30.00 francs per quintal.
- B. 7 (20- 3-33) See B. 4 wheat.
- B. 8 (20- 4-33) Import tax: malted barley, whole 4 % *ad valorem*.
- B. 9 (13-5-33) Every person, who, in connection with the importation of products subject to quotas, has the benefit either of an importing licence or of a quota certificate, will be required to pay a licence fee at the following rates:—
- |                              |                        |
|------------------------------|------------------------|
| for whole barley . . . . .   | 25.00 frs. per quintal |
| for crushed barley . . . . . | 35.00    »    »    »   |
| for barley meals . . . . .   | 40.00    »    »    »   |
- B. 10 (18-5-33) Anti-dumping surtax on malt originating in or consigned from Czechoslovakia: abrogated.
- C. 6 (1-6-33) Quota of whole barley to be imported into France or Algeria during the period from 1-6-33 to 31-5-34, originating in or consigned from the French zone of Morocco: 650.000 quintals.
- C. 7 (1-7-33) Quota for third quarter 1933:
- |                              |                  |
|------------------------------|------------------|
| Barley in grain. . . . .     | 225,000 quintals |
| Crushed barley, etc. . . . . | 110    »         |
| Barley meals . . . . .       | 205    »         |

*Oats and oat derivatives.*

- C. 1 (3-7-31) Quota for import into France or Algeria for the period from 1-6-31 to 31-5-32 of oats originating in and consigned from the French zone of Morocco: 250,000 quintals.
- A. 1 (14-7-31) See A. 1. wheat.
- B. 1 (15-11-31) See B. 1 wheat.
- B. 2 (10-12-31) See B. 2 wheat.
- B. 3 (1-4-32) See B. 3 wheat.

- C. 2 (3-8-32) Quota for import into France or Algeria during the period from 1-6-32 to 31-5-33 of oats originating in or consigned from the French zone of Morocco : 250,000 quintals.
- A. 2 (22-7-32) See A. 5 wheat.
- A. 3 (17-8-32) Import duties (minimum duties) :—
- |                           |      |       |
|---------------------------|------|-------|
| whole oats . . . . .      | frs. | 40.00 |
| oats broken, etc. . . . . | »    | 59.00 |
| oat meal . . . . .        | »    | 66.50 |
- B. 4 (15-11-32) The compensation surtax no longer to be levied on the import of seed oats accompanied by an official certificate declaring that they are selected seeds.
- B. 5 (21-3-33) See B. 4 wheat.
- C. 3 (1-6-33) Quota, to be imported into France or into Algeria during the period from 1-6-33 to 31-5-34 of oats originating or consigned from the French zone of Morocco : 65,000 quintals.

*Maize and its derivatives.*

- C. 1 (3-7-31) Quota for import into France or Algeria during the period from 1-6-31 to 31-5-32 of maize originating in and consigned from the French zone of Morocco : 65,000 quintals.
- B. 1 (15-11-31) See B. 1 wheat.
- B. 2 (10-12-31) See B. 2 wheat.
- B. 3 (1-1-32) Surtax no longer to be applied to shipments of maize in the grain.
- A. 1 (1-2-32) Reduction of duty on small-grained so-called Bessarabian maize, in the new corollary to the commercial treaty with Rumania, of 40 % of the minimum duty, that is, to frs. 14.40.
- C. 2 (31-3-32) Quota of small-grained so-called Bessarabian maize, to be imported under reduced duty during the year 1932: 800,000 quintals.
- C. 3 (22-6-32) Quota of small-grained so-called Bessarabian maize, to be imported under reduced duty during the year 1932 increased to 900,000 quintals.
- C. 4 (3-8-32) Quota for import into France or Algeria during the period from 1-6-32 to 31-5-33 of maize originating in and consigned from the French zone of Morocco : 600,000 quintals.
- A. 2 (17-9-32) Import duties (minimum duties) :—
- |   |      |       |
|---|------|-------|
| maize . . . . .   | frs. | 40.00 |
| maize for the manufacture of starch and glucose; under customs control: reduction of 35 % on the tariff for maize | »    | 26.00 |
| maize, small-grained so-called Bessarabian, in quota . .  | »    | 24.00 |
| maize, broken and bran not containing more than 10 % of meal . . . . .  | »    | 64.00 |
| maize meal . . . . .  | »    | 72.00 |

- C. 5 (23-11-32) Quota of small-grained so-called Bessarabian maize, to be imported under reduced duty during the year 1932 increased to 1,000,000 quintals.
- C. 6 (6-1-33) Quota of small-grained so-called Bessarabian maize, to be imported under reduced duty during the year 1933: 800,000 quintals, of which:—
- |                                    |                  |
|------------------------------------|------------------|
| during the first quarter . . . . . | 250,000 quintals |
| » » second » . . . . .             | 150,000 »        |
| » » third » . . . . .              | 150,000 »        |
| » » fourth » . . . . .             | 250,000 »        |

- C. 7 (9-3-33) Import of maize and of its derivatives contingent during the first quarter 1933:—
- |                              |                    |
|------------------------------|--------------------|
| maize in the grain . . . . . | 1,630,000 quintals |
| maize broken, etc. . . . .   | 80 »               |
| maize meal. . . . .          | 13,500 »           |

Quantities already imported, as well as the quota of small-grained, so-called Bessarabian maize, to be deducted.

- G 8 (1-4-33) Quota for second quarter of 1933:—
- |                              |                  |
|------------------------------|------------------|
| maize in the grain . . . . . | 900,000 quintals |
| maize broken, etc.. . . . .  | 40 »             |
| maize meal . . . . .         | 7,000 »          |

The quota of small-grained so-called Bessarabian maize is included in the total.

- A. 3 (10-4-33) 40 % of the import duties to be levied on a quota of 400,000 quintals of Hungarian maize destined for stockfeeding to be used for the service of Hungarian debts in France.
- C. 9 (29-4-33) The importation into France, with the benefit of a reduction in duty of 35 p. c., of maize intended for use by the starch and glucose industries can only be allowed for each factory within the limits of an annual quota equal to the average of the quantities of maize worked up and subject to the special manufacturing tax, during the seasons (1 October-30 September) 1930-31 and 1931-32.
- C. 10 (1-6-33) Quota to be imported into France or into Algeria during the period from 1-6-33 to 31-5-34 of maize originating in or consigned from the French zone of Morocco: 125,000 quintals.

- C. 11 (1-7-33) Quota for third quarter:
- |                            |                  |
|----------------------------|------------------|
| Maize in grain . . . . .   | 600,000 quintals |
| Maize broken, etc. . . . . | 20 »             |
| Maize meal . . . . .       | 4,000 »          |

The quota of small-grain so-called Bessarabian maize is included in this total.

(to be continued).

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# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

### MARKETING OF AGRICULTURAL PRODUCTS

#### Development in Europe of Tariffs and Restrictions on International Trade in Cereals. (*Concluded*).

##### II. — GREAT BRITAIN AND NORTHERN IRELAND.

From the time when the Corn Laws were abolished in 1847 and especially after the customs duty of 1s. per quarter was repealed (1869), the import of cereals into the United Kingdom was absolutely free. This demonstrates very well the strength of the Free Trade tradition in this country. When, however, the recent measures of protection were introduced, two principal reasons might be found for the change in the traditional policy: on the one hand the period of the war had given many people the impression of a lack of equilibrium between industry and agriculture, an impression which was strengthened when the export of industrial products decreased, especially with the onset of the crisis, while at the same time the quantities of agricultural products to be imported did not diminish; on the other hand it was hoped that by giving advantages to shipments originating in and consigned from countries within the British Empire more goods might be exported to these countries.

This latter consideration is at the basis of the general tariff of 10 % *ad valorem* on almost all imported products originating in or consigned from countries outside the British Empire. As regards cereals the Import Duties Act of 1932, which came into force on 1 March 1932, levied duties of 10 % *ad valorem* on rye, barley, oats and cereal flours, while the Ottawa Agreements Act added others: for wheat 2s. per quarter of 480 lb. and for white flat maize 10 % *ad valorem*, in each case with exemption for shipments originating in and consigned from the British Empire. These latter duties are the results of the Imperial Economic Conference at Ottawa in the summer of 1932 and are fixed for wheat in the agreements with Canada, Australia and India and for white flat maize in the agreements with the Union of South Africa and Southern Rhodesia. It may be added that Canadian wheat shipped from a United States port, even if provided with a certificate of Canadian origin, does not enjoy this preference.

Assistance to agriculturists is also given in the Wheat Act, which came into force on 12 March 1932. The regulations adopted are somewhat complicated. A *standard price* of 45s. per quarter of wheat is established. The growers will sell their wheat on the free market and the average price paid throughout the year for milling wheat produced in the country will be calculated. The grower will have the right to receive at the end of the year what is called a *de-*

*deficiency payment*, i. e., a sum equal to the difference between the *standard price* and the average price for each quarter of milling wheat sold by him. In this way, with the *deficiency payment*, the average price received by the wheat producer will be 45s., but the prices will not be uniform, since those received by each grower will vary according to the price which he has received on the free market.

In order to provide the funds for the deficiency the millers and the importers of flour will be obliged to make a certain quota payment on all flour milled (whether produced from wheat grown in the country or from that imported) and on all flour imported; but the millers whose production consists exclusively of wheat flour employed without further manipulation for the feeding of livestock, including poultry, may obtain certificates which exempt them from these contributions.

The quota payment to be made for flour was fixed at 2.25 s. per 280 lb. from 19 June till 29 October 1932 and at 2.75s. from 30 October until 31 July 1933 (1).

In consequence of the imprisonment of two British subjects in the U. S. S. R., the British Government forbade, as from 22 April 1933 without special licence from the Board of Trade the import of numerous products originating in or coming from the U. S. S. R. These products included wheat, barley, oats and maize in grain. This provision has however been revoked as from 1 July when the two Governments were able to reach an agreement.

## 12. — GREECE.

In Greece the production of wheat, by far the most important cereal, covers only some 40 % of the internal consumption. For breadmaking a preference is shown for imported varieties. In order to make the customs duties effective it was necessary so to organise the internal market as to compel the millers to employ home-grown wheat.

Law No. 3598 of 10 July 1928, several times subsequently changed, established a special organisation for this purpose; under the control of a specially appointed committee, certain quantities of wheat and home-grown barley are purchased each year immediately after the harvest in order to prevent a glut on the market. This wheat is marketed in two ways: by compelling the millers to mix with imported wheat a certain percentage of home-grown wheat and by compelling importers to purchase, during the period October-April, along with imported wheat a certain percentage of home-grown wheat, and, in the period from May to September, to pay, besides import duties, a supplementary tax if there are no purchases of native wheat. For the period from 1 November 1931 to 31 March 1932 the percentage of wheat was fixed at 15 % and its price in paper drachmai 515 per quintal. For imports by Customs Offices of secondary importance the organisation does not arrange for the purchase of home-grown wheat but obliges a supplementary tax to be paid throughout the year. This tax for the above period amounted to 17.48 paper drachmai.

As regards internal regulation the decrees concerning breadmaking are also important as they lay down that only two qualities of wheat flour for this purpose,

(1) From 1 August fixed at 3s. 6d.



with extraction percentages of 78 and 92 respectively, may be manufactured. To reduce the imports of wheat the mixture of flour for bread with 20 % barley flour was authorized.

In addition to the above provisions and the import duties, other measures may be enumerated, which, while based in part on the regulation of the exchange, have certain more general aspects.

The principal of these measures came into force on 27 June 1932 and stipulated that the import of products consigned from other countries which cannot furnish exchange or, if they can, only in limited quantities, for the purchase of Greek products, should be reduced to quantities of a value corresponding to the value of Greek products exported to the same countries.

Apart from these limitations, imports depend only on the payment of duties levied at the time. To meet the needs of the livestock industry it was decided that after 12 December 1931 a quota of 100,000 quintals of yellow maize might be imported free of duty, while, owing to the critical position of certain regions, the import of 50,000 quintals of barley and of 750,000 quintals of maize was permitted between 30 January and 31 May 1933, on payment of the reduced duty of 1.50 metal drachmai per quintal.

The import duties are expressed in metal drachmai and a coefficient of majoration is applied in order to make payment in paper drachmai, that is, drachmai of legal currency. While, consequent on a regulation which came into force in 1926, this coefficient must be fixed from time to time, it was stabilised as from 28 January 1929 at 15, a figure which was changed only recently. When on 20 May 1932 there was a further inflation, this coefficient was increased only for products of secondary importance; and on 2 December it was raised to 20 for flour.

In addition to the customs duties there is also an octroi tax of 25 % of the principal duty, a tax for the service of the " forced loan ", amounting to three-tenths of the two others together, and some minor charges. The total amounts to 75 % of the import duties.

The duties and surcharges, expressed in metal drachmai per quintal, are as follows :—

	Duty	Surtax
Wheat and white maize . . . . .	6.00	4.50
Rye, barley, oats and yellow maize . . . . .	5.00	3.75
Maize, pignoletto . . . . .	3.00	2.25
Wheat flour . . . . .	10.70	8.02
Other flours (in large parcels) . . . . .	10.00	7.50

### 13. — HUNGARY.\*

Hungary is an exporter of cereals. The importance of these crops may be seen from the areas harvested on the average during the quinquennial period 1923-27.

Wheat . . . . .	1,460,000	ha.
Rye . . . . .	669,000	»
Barley . . . . .	421,000	»
Oats . . . . .	287,000	»
Maize . . . . .	1,037,000	»

\* *Ec. 8 Ingl.*

a total of 3,874,000 ha., 70 % of the arable land and almost 42 % of the total area of the country.

It should be noted that in the old Austro-Hungarian Empire the regions which form the present Kingdom of Hungary and the adjacent territories were the principal centres of cultivation of cereals, for which very large markets were found in the other parts of the Empire, all the more so as there was a tariff wall. Thanks to this situation the milling industry shewed great development especially in the environs of the capital. After the war, however, owing to the fact that the new frontiers formed obstacles to the free passage of commodities, and the other Succession States were endeavouring to develop all essential industries in their own territories, the mills did not find the same outlet as formerly. It is especially due to this fact that Hungary in its commercial treaties with other powers has always sought to obtain favourable conditions for the import of its flour, having at one time had a well-established advantage as regards this product in comparison with the other cereal-exporting states of South-eastern Europe.

The production and export surplus during the period mentioned have been as follows (in thousand quintals):—

	Production	Export surplus
Wheat . . . . .	18,659	4,940
Rye . . . . .	7,096	1,618
Barley . . . . .	5,078	321
Oats . . . . .	3,368	319
Maize. . . . .	18,160	717

The wheat export consists to a great extent of flour (export surpluses: wheat in the grain: 2,600,000 quintals; wheat flour: 1,755,000 quintals; in the total flour reduced to grain), but gradually the neighbouring importing countries succeeded in extending their own milling industry and thereby considerably diminished the export of flour. The measures taken in the two special markets for Hungarian wheat flour – Austria and, for smaller quantities, Czechoslovakia – had a very unfavourable effect in the commercial year 1930-31 and still more in the following years. In Austria there was an increase (from July 1931) in the duty on flour, which subsequently was no longer proportioned to the increase in the duty on whole cereals (see Austria). In Czechoslovakia the termination of the commercial treaty on 15 December 1930 and limitation of flour imports in 1931, enforced still more rigorously as from August 1932 (see Czechoslovakia p. 322), had an unfavourable result on Hungarian exports. It is evident that under such conditions measures of tariff protection or quota-fixing cannot have more than a very small influence as regards Hungary: import duties may be of use only as regards keeping foreign cereals outside the national markets at times when by scarcity or through internal measures

prices are higher than in the surrounding countries. They were as follows on 1 January 1931:

Wheat . . . . .	gold cr.	6.30	per quintal
Rye . . . . .	»	5.80	»
Barley . . . . .	»	5.00	»
Oats . . . . .	»	4.80	»
Maize . . . . .	»	2.00	»
Flour, etc. of wheat . . . . .	»	13.00	»
Flour, meal, etc. of rye and barley . . . .	»	12.00	»
Meal, etc. of oats . . . . .	»	10.00	»
Meal, etc. of maize . . . . .	»	8.00	»

All the duties have remained the same since 1925 except that on barley, which, owing to Czechoslovakian imports, was increased in 1927 (original duty gold cr. 2.80). The duty on oat flour was fixed from 8 August 1927 to 15 December 1930 in the commercial treaty with Czechoslovakia, terminated on that date and was not renewed. Since the beginning of 1931 the duties have not been changed.

It should be added that from 20 February 1931 seed cereals may be imported free on production of a special permit.

In addition to the customs duty there is also a turnover tax, which, until 14 September 1931, generally amounted to 2% *ad valorem* and from that date to 3%.

In seeking for other measures to assist cereal growers, the Hungarian Government in the first place founded in 1929 the Hungarian Institute for Agricultural Export, which watches developments in the principal foreign markets.

As the prices of wheat on the regulating markets fell very low, Law XXII of 15 July 1930 brought into force the so-called "Cereal Coupons System", of which the fundamental principle is that the buyer of cereals is obliged to give to the producer for each quintal of wheat, rye and meslin a coupon, the so-called *boletta*, valued at 3 pengös, which may be employed up to its total value in the payment of taxes and other public burdens. In the case of sales of commodities abroad the value of the *boletta* is reimbursed to the exporter by the Exchequer. In this way the Hungarian consumer pays the increase in favour of the producer.

The same law further stipulated that "the price of milling to be levied by the millers, the bolting percentage, the price of the milling derivatives and the price of the bread", as well as "the proportion and the quality of rye for mixing with wheat in the bread" may be fixed by decree.

The value of the *boletta* utilised for the partial payment of wheat, rye and meslin has been increased to 10.00 pengös, as from 11 July 1931. For the commercial season from 1 July 1932 to 30 June 1933 the *boletta* system is modified, leaving, however, the possibility to the grower of obtaining a higher price than the corresponding price abroad.

#### 14. — IRISH FREE STATE.

In this country, during the long period when it formed part of the United Kingdom, the Free Trade system held good, but the Government of the Free State has gradually changed the orientation of its policy so that there are now certain

duties on cereals to be enumerated which were in force up to 24 May 1933. In general there exists a double régime : a general duty and a duty on shipments originating in and consigned from the British Empire (preferential duty). The development of these duties has been as follows (in every case in shillings and pence) :—

	General duty	Preferential duty
Wheat . . . . .	exempt	exempt
Rye . . . . .	»	»
Barley (as from 28-9-32; duty per 112 lb.).	7/6	5/-
Oats (duty per 112 lb. as from 24-10-31) . .	2/6	1/8
»   »   »   »   »   »   28-9-32 . .	7/6	5/-
»   »   »   »   »   »   7-3-33 . .	22/6	15/-
Maize (as from 28-9-32; duty per 112 lb.) . . .	7/6	5/-
Wheat flour (as from 7-7-32; duty per 280 lb.).	5/-	5/-
Rye flour and barley flour . . . . .	exempt	exempt
Malted barley (as from 28-9-32; duty per 112 lb.	10/6	7/-
Oat meal (duty per 112 lb.; as from 1926) . .	2/6	2/6
»   »   »   »   »   »   24-10-31 .	6/-	4/-
»   »   »   »   »   »   28-9-32 .	15/-	10/-
Maize meal and broken maize (duty per 112 lb.;		
as from 30-4-32) . . . . .	1/-	1/-
Maize meal and broken maize (duty per 112 lb.;		
as from 28-9-32) . . . . .	9/-	6/-

It should be added that from 27 September 1932 the import of maize was permitted only under special licence and that exemption from the customs duty on wheat flour may be given when the necessities of the country require it.

On the 24 May 1933 an Act " to make provision for the control and regulation of the business of milling wheat and other cereals ", as well as " to promote and encourage the growing of certain cereals " came into force under the short title of the Agricultural Produce (Cereals) Act, 1933. The act limits the imports of wheat flour and meal in relation to the necessities of the milling industry and that of whole cereals and other meals in regard to the conditions in agriculture. At the same time the duties on cereals, flours and meals are abrogated.

Existing flour mills are not in a position to cater for the full requirements of the country. Pending the erection of new mills the Minister for Industry and Commerce will grant licences from time to time for the importation of flour in sufficient quantities to meet the demands of the country.

That part of the Act which directly regulates the milling industry came into force a week later. It provides that no person may carry on by way of trade or for the purposes of gain the business of milling wheat at any mill unless he is the holder of a licence which covers the milling of all wheat into either flour or meal. With each such licence granted the Minister prescribes the quantity of wheat which may be milled during the quota year (1 August of any year to 31 July of the following year) and he prescribes a preliminary quota

for the period between the date of the licence and 31 July next following, e. g., from 31 May, 1933, to 31 July, 1933. It is an contravention for any miller to fail to mill at least 90 % of the quota allotted to his mill and if he mills in excess of the quota he must pay to the Minister for Industry and Commerce the sum of 3s. in respect of every 400 lb. of wheat over-milled.

#### 15. — ITALY.

*Introduction.* — In Italy by far the most important agricultural product is wheat, which covers no less than 35 %-38 %, according to the year, of the arable land. It is not, therefore, surprising that the Fascist Government in assisting agriculture has concentrated on this crop, particularly with a view to influencing favourably the balance of trade. The importance of this cereal may also be seen by the following comparison: of all carbohydrate foods wheat supplies no less than 72 % against 18 % for maize and 10 % for potatoes, rice, rye and beans together. The measures to favour cultivation of wheat are known as the Wheat Campaign (« battaglia del grano »).

The customs duty on wheat, repealed in 1921, was again brought into force in 1925. It then amounted to 7.50 gold liras. The duty had generally only a small effect in the first part of the commercial season (July-December), which was explained by the fact that many agriculturists found themselves obliged to sell their crop as soon as possible in order to obtain cash. Immediately that the monetary situation of the country (after the inflation and the partial deflation) allowed, the Government began to assist agriculture by means of other measures, such as agricultural credits on cereals stored in silos, also constructed by means of Government credits.

Nevertheless it was necessary to increase the duties twice during this period, especially as deflation had had the effect of reducing prices as expressed in actual liras, while debts, incurred at a less favourable moment, continued to be burdensome. The first change occurred on 13 September 1928, when the duty was raised to 11.00 gold liras, the second on 24 May 1929, when it was raised to 14.00 gold liras. This latter measure was taken under the influence of the very large harvest which was then expected and when, with 70,795,000 quintals, it was almost 24 % above the average for the period 1923-27; the decline in price at the time of the harvest was very heavy. After the quantities immediately put on sale were absorbed, prices began to rise, while on the large free importing markets they fell. To avoid the spread of this movement to the internal market, the duty was increased again and from 5 June 1930 amounted to 16.50 gold liras.

The duty on wheat flour was in 1925 11.50 gold liras, that is, 53  $\frac{1}{3}$  % more than that on whole wheat. This proportion was later fixed in several commercial treaties as the maximum percentage. On 13 September 1928 the duty on flour was raised to 16.75 gold liras; on 24 May 1929 to 20.30 gold liras; on 5 June 1930 to 23.70 gold lire. When it is calculated that at least 135 kg. of wheat are required for the manufacture of 100 kg. of flour, the duty on the latter commodity ought to reach, without taking into account the costs of milling,

1.35 × 16.50 gold liras, equivalent to 22.27 ½ gold liras, so that at this time there was only a very small compensation for the cost of production of flour. It may be indicated here that in 1931 this difference was increased (see A 1 wheat).

The duty on white maize flour underwent the same increases, and that on semolina was changed proportionally, although it was always higher (in 1930: 29.40 gold liras). The duty on whole white maize was the same as that on wheat in the grain.

As may be seen from the table below, the maize crop is also very important. In the period 1923-27 there was harvested on the average:—

Wheat . . . . .	4,771,000 ha.
Rye . . . . .	125,000 »
Barley . . . . .	234,000 »
Oats . . . . .	483,000 »
Maize . . . . .	1,535,000 »

As, however, the duties on cereals other than wheat were generally fixed in the commercial treaties, it was not possible to bring about an increase, which would, in any case, have had relatively little effect on the position of the agricultural holding, as the great mass of the products do not leave the farm on which they are grown. In this way, throughout the period under consideration, before 1931, the duties were as follows: rye 4.50 gold liras per quintal, barley 4.00 gold liras, oats 4.00 gold liras (from 5 June 1930 even 3.25 gold liras, according to the treaty with Rumania), maize other than white 1.15 gold liras.

As exceptions from these duties it may be noted that white maize for manufacture of starch is, under special conditions, admitted free of duty. An annual quota of 100,000 quintals of wheat and of 160,000 quintals of barley consigned from Italian colonies is also admitted exempt.

It may be added that by a measure with effect as from 1 March 1931, the customs duties, which were always expressed in gold liras, have been converted into terms of legal currency by applying the factor of 3.67. A slight rounding off of the figures has at the same time been made but the total of the duties is not affected. The amounts of the duties expressed in the legal currency are as follows:—

Wheat and white maize . . . . .	L. 60.60
Wheat flour and white maize meal . . . . .	» 87.00
Rye . . . . .	» 16.50
Rye flour . . . . .	» 23.90
Barley . . . . .	» 14.70
Oats . . . . .	» 11.95
Barley flour and oat flour . . . . .	» 22.00
Maize, other than white . . . . .	» 4.20
Meal of maize other than white . . . . .	» 11.55

In addition to the import duty there is also a turnover tax (*tassa di scambio*), from which, however, are exempt wheat and its milling derivatives, as well as

barley and maize and their milling derivatives, the latter so far as they are not destined for industrial uses. The tax amounts to 1.5 % *ad valorem*.

The more important changes in the regulations after 1 January 1931 (as far as they have come to the knowledge of the Institute) are reproduced below.

*Wheat and its derivatives.*

- E. 1 (17-6-31) For mills established on the customs territory of the Kingdom and milling wheat of foreign origin for the production of flour and semolina, it is obligatory to employ in such production a certain percentage of home-grown wheat (reg. of 10-6-31).
- E. 2 (2-7-31) Minimum percentage of home-grown wheat for milling: 95 %.
- A. 1 (8-7-31) Import duty: wheat flour (and white maize meal): liras 92.90.
- A. 2 (19-8-31) Import duties: wheat in the grain (and white maize) : liras 75.00 ; wheat flour (and white maize meal): lire 112.35; Wheat semolina: liras 130.10.
- E. 3 (1-11-31) Minimum percentage of home-grown wheat for milling: hard wheat: 75 %; soft wheat: unchanged.
- E. 4 (1-1-32) Minimum percentage of home-grown wheat for milling: hard wheat: 50 %; soft wheat: unchanged.
- E. 5 (1-2-32) Minimum percentage of home-grown wheat for milling: hard wheat: 20 %; soft wheat: 70 %.
- E. 6 (1-3-32) Minimum percentage of home-grown wheat for milling: hard wheat: 20 %; soft wheat: Northern and Central Italy, excluding Latium: 60 %; Latium, Southern Italy and the Islands: 40 %.
- E. 7 (21-3-32) Minimum percentage of home-grown wheat for milling: hard wheat: 20 %; soft wheat: Northern and Central Italy, excluding Latium: 50 %; Latium, Southern Italy and the Islands: 30 %.
- E. 8 (26-4-32) Minimum percentage of home-grown wheat for milling: hard wheat: Northern and Central Italy, excluding Latium: 10 %; Latium, Southern Italy and the Islands: 15 %; soft wheat: Northern and Central Italy excluding Latium: 40 %; Latium, Southern Italy and the Islands: 15 %.
- E. 9 (23-5-32) Minimum percentage of home-grown wheat for milling: hard wheat: Northern and Central Italy, excluding Latium: 5 %; Latium, Southern Italy and Sardinia: 10 %; Sicily: 15 %; soft wheat: Northern and Central Italy, excluding Latium: 25 %; Latium, Southern Italy and the Islands: 5 %.
- E. 10 (27-6-32) Flours which enter into trade should correspond to specially fixed criteria, not be mixed with any other flour or meal (unless clearly indicated) nor be bleached or colored physically in any other way than by extraction) or chemically (Reg. of 17-3-32).

- E. 11 (27-6-33) Minimum percentage of home-grown wheat for milling: hard wheat: Northern and Central Italy, excluding Latium: 70 %; Latium, Southern Italy and the Islands: 95 %; soft wheat: mainland Italy and Sardinia: 95 %; Sicily: 70 %.
- E. 12 (1-1-33) Minimum percentage of home-grown wheat for milling: hard wheat: Northern and Central Italy, excluding Latium: 60 %; Latium, Southern Italy: 90 %; the Islands: 95 %; soft wheat: Northern and Central Italy, excluding Latium: 95 %; Latium and Southern Italy: 80 %; the Islands: 60 %.
- E. 13 (16-3-33) Minimum percentage of home-grown wheat for milling: hard wheat: 95 %; soft wheat: unchanged.
- E. 14 (1-4-33) Minimum percentage of home-grown wheat for milling: hard wheat: unchanged; soft wheat: Northern and Central Italy, including Latium: 95 %; Southern Italy: 90 %; Islands: 60 %.
- E. 15 (16-4-33) Minimum percentage of home-grown wheat for milling: hard wheat: unchanged; soft wheat: 95 %.

*General note concerning wheat.* — Although prices on the open markets have risen recently, in Italy a marked diminution is to be noted, attributable to an increased consumption of other products of which last year's harvest was considerably in excess of average, such as potatoes, maize, chestnuts and leguminous crops. While the difference between the prices of soft native wheat "buono mercantile" and No. 2 Manitoba on the Milan market during the first months of 1933 was only liras 8 to 10 in favour of imported wheat, this difference rose in April to liras 19.20, in May to liras 20.60 and in June to as much as liras 34.85 ("buono mercantile": liras 89.50; No. 2 Manitoba liras 124.35). In order to meet this situation, which is unlikely to recur judging by the estimates for the next harvest which in all probability will not be so good as the record wheat harvest of 1932, the Government has promised to maintain the customs duties on wheat and the proportions of native wheats for grinding at a very high level (from 17 July the minimum percentage of home-grown wheat for milling will be 99 %, both for hard and for soft wheat) and to make strong efforts to secure the heavy supplies which are available each year immediately after harvest, by taking steps to give an advance of liras 90.00 per quintal for a quality only slightly superior to "buono mercantile" to farmers who are prepared to store in special granaries.

*Rye and its derivatives.*

- A. 1 (9-7-31) Import duties:
- |                            |            |
|----------------------------|------------|
| Rye in the grain . . . . . | lire 36,50 |
| Rye flour . . . . .        | " 50,90    |
- B. 1 (15-7-31) Turnover tax increased to 2.5 % *ad valorem*.
- B. 2 (1-4-32) Rye and milling products, even when destined for other uses than breadmaking: exempt from turnover tax.



*Barley and its derivatives.*

- C. 1 (24-4-31) Annual quota of 2,000 quintals of two rowed barley, for seed, under special conditions : exempt.
- B. 1 (15-7-31) See B. 1 rye (the measure refers only to products for industrial purposes).
- D. 1 Malt : imports prohibited except in relation with certain commercial treaties.
- B. 2 (24-9-32) Products of recognised French origin, so far as they are not exempt from the turnover tax (see also B. 1), charged with a supplementary *ad valorem* tax at the following rate :—
 

Barley for industrial uses . . . . .	2.5 %
Barley meal and malted barley for industrial uses . . . . .	5.0 %
Oat meal . . . . .	5.0 %
Maize for industrial uses . . . . .	2.5 %
Maize meal for industrial uses . . . . .	5.0 %

*Oats and oat derivatives.*

- B. 1 (15-7-31) See B. 1 rye.
- A. 1 (1-9-32) Oats : conventional duties fixed in the commercial treaties with Hungary and Rumania abrogated. New conventional duty (treaty with Rumania), liras 16.00; general duty, liras 24.00 (duty on meal unmodified).
- B. 2 (24-9-32) See B. 2 barley.

*Maize and its derivatives.*

- A. 1 (8-7-31) See A. 1 wheat.
- B. 1 (15-7-31) See B. 1 rye (the measure refers only to products for industrial purposes).
- A. 2 (19-8-31) See A. 2 wheat.
- A. 3 (2-9-31) Import duty : maize other than white, liras 30.00; meal from this maize, liras 39.80.
- B. 2 (24-9-32) See B. 2 barley.
- C. 1 (4-7-32) Maize other than white : import of an annual quota of 40,000 quintals originating in the Italian Colonies permitted at reduced duty of liras 10.00.

*General note with reference to all products.* — The measures adopted by the Italian Government for the purpose of assisting Italian agriculture to escape from present conditions, particularly difficult in certain districts of Northern Italy, have been many but the general principles involved are as follows : (1) an equitable customs protection for certain products of Italian agriculture but without recourse to any quota system ; (2) special measures in favour of certain provinces particularly affected by the crisis, consisting in contributions by the State towards the payment of the interest on heavy debt charges ; (3) an

annual contribution of six million liras over a period of 30 years in aid of the Association of Agrarian Consortiums, which is responsible for providing farmers with machinery, fertilisers and seeds; (4) relief for financial losses incurred by deserving farmers, amounting annually to 46 million liras for a period of 25 years. The total charge on the Italian State Budget in respect of these various provisions (though spread over a long period) amounts to 1740 million liras, which capitalised at present rates represents approximately 900 million liras.

#### 16. — LATVIA.

Latvia is in the same position as was described in the case of Estonia. In order to favour live stock production, the duties previous to 1931 were very low except in the case of wheat, the cultivation of which it was desired to encourage for the same reasons as in the other Baltic countries.

The law of 8 August 1930, however, already inaugurated measures of control which are of very great importance. The proportion of home-grown wheat and rye to be employed in flour for breadmaking may be fixed by the Government. Loans on cereal stocks, so far as these exceed the quantities to be consumed on the holding or in the farmer's household, may be made. The prices for these quantities are fixed in relation to the costs of production and the millers must pay the same price for imported cereals. The import of wheat, rye and their products is permitted only on production of a certificate showing the purchase of certain quantities of the same product of home-grown origin. For the greater part of the commercial year 1930-31 the proportions were as follows:—

1 quintal imported against	home-grown quintals
Wheat . . . . .	wheat 1
Wheat flour . . . . .	» 1.5
Rye . . . . .	rye 4
Rye flour . . . . .	» 5

The proportions were changed in November 1931 for the commercial year 1931-32 as follows:—

1 quintal imported against	home-grown quintals
Wheat . . . . .	wheat 2 and barley $\frac{1}{3}$
Wheat flour . . . . .	» 3 and barley 1
Rye . . . . .	rye 6
Rye flour . . . . .	» 8

In addition, already in 1931, the import quotas of barley and of oats were fixed at 5,000 quintals per annum for each cereal, on 11 February 1932 that of wheat at 250,000 quintals and on 18 February 1932 that of rye, maize and cereal flours at 75 % of the imports during the year 1931.

This regulation was not, however, sufficient, in part owing to the fact that the Government carried too great a burden of cereal stocks in proportion to the financial resources of the country. For this reason, from 28 June 1932, the

Monopoly of Bread Cereals, administered by the Cereal Office of the Ministry of Agriculture, controls and regulates the whole trade, buying cereals and their products abroad only when home production does not suffice.

The position of the duties, after the increases of 8 August 1930, is given in the following summary, in each case per quintal:—

Wheat . . . . .	lats. 7.00
Rye . . . . .	» exempt
Barley . . . . .	» 3.00
Oats . . . . .	» 3.00
Maize . . . . .	» exempt
Unbolted wheat flour . . . . .	» 10.00
Bolted wheat flour . . . . .	» 25.00
Coarse-milled rye flour . . . . .	» 5.00
Rye flour bolted at least in part. . . . .	» 12.00

The following are the few subsequent changes: on 27 July 1931 the duties on barley and oats were increased, both to lats 12.00; on 12 July 1932 that on oats underwent a further increase to lats 24.00, while a duty of lats 1.00 was placed on maize.

It should be pointed out that only the minimum duties are reproduced but the maximum duties, which are considerably higher, are applied to shipments originating in or consigned from countries with which Latvia has not a commercial treaty (e. g., Yugoslavia, Argentina and Australia).

Even these minimum duties are not however in practice often levied, since two neighbouring countries exporting wheat (which is the most important cereal imported) have treaties with Latvia containing preferential duties. As regards the U. S. S. R., which obtains a reduction of 20 % on the minimum duties on wheat, this regulation has been in force since 5 November 1927 (Russian preferential clause). The treaty with Lithuania, which came into force on 1 January 1931, provided for preferential treatment for, amongst other commodities, wheat (reduction of 75 % on the minimum duty) and rye (fixed exemption, shipments of other origin also remaining free until Latvia imposes an autonomous duty). It may be useful to add that preferential treaties also exist with Estonia and Finland but do not refer to cereals (Baltic preferential clause).

The import duty on wheat (like the duties on sugar and several other industrial and agricultural commodities), may, according to the law of 20 December 1929, be paid with import certificates for certain other agricultural products; the law enumerates barley, oats, barley flour and cereal groats in general, but the law of 23 December 1930 abolishes these regulations so that thenceforward these certificates have been supplied only for the export of eggs and of clover and timothy seed.

#### 17. — LITHUANIA.

In contrast with the other Baltic States, Lithuania is an exporter of cereals, and cereal production plays a very important part in the national agricultural economy. In 1930 cereals occupied 64 % of the cultivable land,

excluding fallows. Wheat and rye preponderate but for barley and oats also an export surplus has been recorded, at least in recent years. It is evident, therefore, that the customs duties are of practical value only in the event of a temporary shortage and for the stricter regulation of the home market. For the latter purpose they are fixed at a very high level.

Wheat . . . . .	30.00	lits	per	quintal
Rye, barley, oats, maize . . . . .	20.00	»	»	»
Wheat flour . . . . .	90.00	»	»	»
Flour of other cereals . . . . .	55.00	»	»	»

The last duty was fixed at this figure on 29 March 1931 and was previously 45.00 lits. Shipments of cereals in the grain for seeding purposes, destined for agricultural organisations, may, on special authorisation, be exempt from duty.

In order to assist farmers the Government has organised the purchase and storing of cereals under a large cooperative organisation.

#### 18. — NORWAY.

In Norway import requirements for all cereals are large because home production, due principally to climatic conditions, is very limited. In order to assist farmers and to guarantee them a remunerative price, the Government has organised trade in the principal cereals and their flours under a form of Monopoly (Statens Kornforretning). Cereal production is, however, of limited importance; in 1930, for example, cereals accounted for only 23 % of the area of arable land.

The Monopoly purchases the entire quantity of home-grown cereals offered for human consumption (in Norway barley products are also largely consumed) and pays prices in accordance with the average prices ruling on the principal free markets.

The price is generally 4.00 crowns above these free prices for wheat, rye, barley and oats. For quantities consumed on the farm compensation is also paid amounting to 4.00 crowns for wheat, rye, and barley and 3.00 crowns for oats, on condition that these cereals are ground in specially authorised mills.

#### 19. — THE NETHERLANDS.

In the Netherlands agriculture as distinct from horticulture is directed principally toward the transformation of the products of the soil, whether of domestic origin or imported, into meat, dairy products and eggs, and consequently the bulk of the cereals never leaves the farms on which it has been produced. This is particularly the case for the most important cereal, rye, which, according to recent estimates, is consumed to the extent of 90 % on the farm. The other cereals were during the five-year period 1923-27 only of secondary importance as is indicated by the average areas harvested:—

Wheat . . . . .	55,700	ha.
Rye . . . . .	200,700	»
Barley . . . . .	26,500	»
Oats . . . . .	151,500	»

totalling 434,400 ha., 46 % of the arable land but only 17 % of the total cultivated area, of which permanent meadows alone accounted for at least 1,260,000 ha. in the same period.

A still clearer idea is obtained from an examination of the balance of production and import surplus on the average for the five years indicated above (expressed in thousands of quintals)

	Production	Import surplus
Wheat . . . . .	1,522	7,505
Rye . . . . .	3,731	1,155
Barley . . . . .	740	2,625
Oats . . . . .	3,068	901
Maize . . . . .	—	9,599

According to these figures, the situation is comparable with that existing in Belgium and Denmark, although in the Netherlands, the inadequacy of home production is still more conspicuous. It should, moreover, be stated that the population, which consumes ryebread generally only to a limited extent, prefers bread made from imported bolted wheat flour. Home-grown wheat is, on the contrary, principally fed to poultry. From the above it is evident that the principal effect of a customs duty on cereals would be an increase in the cost of livestock production.

Naturally under these conditions, there are no customs duties on either cereals or flour, which are considered as raw or semi-manufactured materials. Consequently, and also as a result of the free trade tradition in the Netherlands since the fifties of last century, they are not subject to fiscal duties, which, for many other products, were at first 5 % and, from 1925 onward, 8 % *ad valorem*, not taking into consideration provisional increases for fiscal purposes.

After 1930 this policy remained unchanged in regard to import duties. Note should here be made of the protection given to wheat production by the law of 21 February 1931. This law stipulates that "it may be prohibited or permitted only under special circumstances to transport, hold or deliver wheat flour and meal, the composition of which does not correspond to that prescribed". One of these stipulations to be borne in mind is that, of the total quantity of wheat flour and meal, the maximum proportion of home-grown wheat flour and meal to be required is 25 %.

At first (from 4 July 1931) the minimum percentage of home-grown wheat to be utilised in flour for breadmaking was fixed at 20 % but when, in the following October, the new crop had ripened, this percentage was increased to 22½%. For home-grown wheat, the Central Organisation for the sale of wheat pays a remunerative price while, to cover purchasing and other expenses, it receives on the other hand from the importer a certain sum per quintal of imported wheat, except for wheat recognised to be unsuitable for breadmaking. As regards imports of flour, a Central Organisation has been set up for the regulation of the import trade in flour and wheat. Owing to the fact that the Government did not propose this measure until the beginning of 1931, farmers did not take it into account when sowing their winter crops and were

only able to increase the spring wheat sowings so as to reach a total of 77,800 ha. In 1932 the area harvested was however no less than 120,100 ha. The minimum percentage was then fixed, from 1 August onward, at 25 % but did not suffice to absorb the whole of the crop. The yield was also, thanks to fine weather, very high. The Central Organisation for the marketing of wheat sold on the open market the surpluses bought by it from the growers, while at the same time, in order to prevent too great a decline in the average price, raising the price of the home-grown wheat to be used in breadmaking mixtures.

The regulations regarding wheat were modified by a further law of 9 February 1933, which permitted the use of up to 40 % home-grown wheat in flour. On 13 February, that is, on the day following the coming into force of this modification, the compulsory percentage was increased from 25 % to 35 %.

As a result of this legislation, the price of bread has risen though only to a small extent. In Belgium, however, where baking costs and also the price of the wheat mixture used are lower, it has been found possible to produce bread at so cheap a rate that it is worth while to import it into the Netherlands, the result being that this importation threatened to jeopardize the action that was being taken to encourage wheat growing. For this reason the importation of wheaten bread and of dough for the manufacture of this bread was rationed as from 1 November 1932 until 31 October 1933 to 100 % of the average quantities imported during a period of 12 months between 1 November 1930 and 1 November 1932 from any one country.

Finally reference should be made to the assistance to be given to growers of rye in so far as they generally sell a large part of their crop (holdings in the fen colonies and on lands reclaimed in 1905 and after). With regard to this assistance, a decree of 5 May 1933 restricts the import of rye flour and meal during the period from 1 April 1933 to 31 March 1934 to 100 % of the average quantities imported during 1931 and 1932. Another reason for the decree was that the bakers started mixing a large percentage of rye flour with the mixed wheaten flour for bread making.

## 20. — POLAND.

Poland is mainly an exporting country as regards cereals but, especially in the period preceding the crisis, scarcity was experienced from time to time. During this period it was impossible to regulate the market satisfactorily, owing to the fact that agriculturists found themselves under the necessity of selling immediately after the harvest in order to obtain cash, the Government not being in a position to grant large loans. In this way the necessity was felt from time to time of raising the export duties. As recent examples of these duties on cereals may be indicated those on wheat, amounting to zł. 20.00 per quintal (for the period 1 October 1928 to 31 July 1929), on rye and rye flour, to zł. 15.00 (for the period 20 January 1927 to 31 July 1929) and finally on oats, to zł. 10.00 (for the period 12 October 1928 to 30 June 1929).

The importance of the various crops may be seen from the short table following, in which are given the areas harvested, the production and the export surplus (+) or import surplus (—), the first in thousands of hectares, the others

in thousands of quintals, in every case for the average of the period 1923-1927 :—

	Area	Production	Import or export surplus
Wheat . . . . .	1,291	14,688	+ 1,663
Rye . . . . .	5,578	55,466	— 446
Barley . . . . .	1,102	12,033	— 921
Oats . . . . .	1,950	19,852	+ 71
Maize . . . . .	86	880	+ 417

It should be stated here that the production of the more recent years was considerably higher so that there is now a large export surplus of each of these products except maize. In view of these surpluses two measures are of importance; the import duties, which have several times been augmented, and the export bonuses given in the form of drawbacks of import duties on chemical fertilizers, equipment, etc. for use in agriculture, thus increasing the cost of agricultural production. The 1924 tariff exempted whole cereals from duty and in 1925 the import of flour was also free. The changes that have since taken place are given in the short table following, in every case in zloty per quintal. Account should be taken of the inflation of the zloty, which, at first in 1924 was fixed at 19.295 dollar cents but gradually fell until it was established in October 1927 at the rate of 1.719 new zloty to 1 old zloty (1 new zloty = 11.218 dollar cents).

In addition to the import duty a manipulation surtax amounting to 10 % of the duty was levied from 31 July 1926.

These duties are in theory completely prohibitive, but do, however, serve as a method of regulating imports; the Minister of Finance having the power, in case of imports being necessary, to admit them free of duty as regards wheat, rye and horsetooth maize.

Date of change	Wheat	Rye	Barley	Oats	Maize other than horse-tooth	Wheat flour	Rye flour
1-1-26 . . . . .	—	—	—	—	—	15.00	—
15-3-28 . . . . .	—	—	—	—	—	19.50	5.00
30-10-28 . . . . .	—	11.00	—	—	—	—	—
11-12-28 . . . . .	11.00	—	—	—	—	—	—
30-9-29 . . . . .	—	—	—	—	—	—	16.50
26-10-29 . . . . .	—	—	11.00	11.00	6.00	—	—
31-7-30 . . . . .	17.50	—	—	—	—	25.50	—

It will be noted here that the duty on rye was higher than that on flour from 30 October 1928 to 30 September 1929, but it should be remembered that import under Ministerial authorisation was free, which meant a practical prohibition of rye flour of undesired origin (Germany), while in addition from 4 April until 31 July 1929 the import of rye (and of wheat) was prohibited.

The import of flour was later again prohibited except in the case of Yugoslavia, which, in view of the commercial treaty that entered into force on 30 October 1930, has the right to import into Poland 15,000 quintals of wheat flour per annum.

As regards the drawbacks as against export mentioned above, for the period from 16 November 1929 until 15 April 1930 these were given as bonuses and remained in force, following on a new decree, until 31 October 1930 and afterwards following on a further regulation, indefinitely. At the same time the total quantity was to some extent modified, as will be seen from the following summary (in each case in zloty per quintal):—

	16-2-29 30-7-30	31-7-30 30-10-30	From 1-11-30
Wheat . . . . .	6.00	6.00	6.00
Rye . . . . .	6.00	6.00	6.00
Barley . . . . .	4.00	4.00	4.00
Oats . . . . .	4.00	4.00	—
Cereal flour wholly bolted, barley groats, malt . . .	9.00	12.00	12.00
Cereal flour not wholly bolted	9.00	12.00	9.00

These drawbacks are given only for shipments accompanied by special certificates, which are released in cases where the import is desirable, this depending also on the quality of the merchandise.

There should also be mentioned the milling law of 7 December 1928, which fixed in general that all flour for breadmaking and other uses must have an extraction percentage of 65 % in the case of wheat and of 70 % in the case of rye. For rye the percentage 70 is to be taken as the minimum, for wheat no other percentage is permitted except for exports.

In the following summary are given the more important measures which have modified the situation as from 1 January 1931, in so far as they have come to the knowledge of the Institute.

#### *Wheat and its derivatives.*

##### A. 1 (6-3-31) Import duties increased:—

wheat . . . . .	zl. 25.00
wheat flour . . . . .	» 37.00
wheat groats . . . . .	» 36.00

##### F. 1 (19-3-31) A Government Fund for the purpose of assisting export of agricultural and industrial products of every kind established.

##### F. 2 (6-5-31) Repayment of customs duties (drawback) paid on import of chemical fertilisers, etc. as against export of cereals: amount changed (reg. of 15-1-31):

cereal flour wholly bolted . . . . .	zl. 10.00
cereal flour not wholly bolted . . . . .	» 8.00
the other bonuses . . . . .	unchanged



C. 1 (1-1-32) Import of all whole cereals, flour, groats and malt prohibited except with special licence.

B. 1 (14-1-32) Manipulation surtax doubled so that it now amounts to 20 % of the customs duty :

wheat . . . . .	zl.	5.00
rye, barley, oats . . . . .	»	3.40
maize . . . . .	»	0.60
wheat flour . . . . .	»	7.40
wheat groats . . . . .	»	7.20
meal of barley, oats or maize . . . . .	»	5.00
barley groats . . . . .	»	6.40
malt . . . . .	»	7.20

*Rye and its derivatives.*

A. 1 (6-3-31) Import duties increased :

rye . . . . .	zl.	17.00
rye flour . . . . .	»	25.00

F. 1 (19-3-31) See F. 1 wheat.

F. 2 (6-5-32) See F. 2 wheat.

C. 1 (1-1-32) See C. 1 wheat.

B. 1 (14-1-32) See B. 1 wheat.

*Barley and its derivatives.*

A. 1 (6-3-31) Import duties increased :

barley . . . . .	zl.	17.00
barley meal . . . . .	»	25.00
barley groats . . . . .	»	32.00
malt . . . . .	»	36.00

F. 1 (19-3-31) See F. 1 wheat.

F. 2 (6-5-31) See F. 2 wheat.

C. 1 (1-1-32) See C. 1 wheat.

B. 1 (14-1-32) See B. 1 wheat.

F. 3 (1-12-32) Repayment of customs duty paid on import of chemical fertilizers, etc., as against the export of cereals: amount changed: malt: zl. 3.00.

*Oats and oat derivatives.*

A. 1 (6-1-31) Import duties increased :

oats . . . . .	zl.	17.00
oat meal . . . . .	»	25.00

F. 1 (19-3-31) See F. 1 wheat.

F. 2 (6-5-31) See F. 2 wheat.

C. 1 (1-1-32) See C. 1 wheat.

B. 1 (14-1-32) See B. 1 wheat.

F. 3 (1-1-33) Repayment of customs duty paid on import of chemical fertilizers, etc., on export of oats: zl. 4.00 (drawback fixed until 31-3-33); (prolonged until 31-7-33).

*Maize and its derivatives.*

- A. 1 (6-3-31) Import duties increased: maize meal: import duty zl. 25.00.  
 F. 1 (19-3-31) See F. 1 wheat.  
 F. 2 (6-5-31) See F. 2 wheat.  
 A. 2 (1-1-32) Maize meal: import duty zl. 65.00.  
 C. 1 (1-1-32) See C. 1 wheat.  
 B. 1 (14-1-32) See B. wheat.  
 A. 3 (10-10-32) Seed maize: import under special licence exempt from customs duty.

## 21. — PORTUGAL.

The Portuguese Government completely controls the cereal trade. This control is particularly strict as regards wheat and rye. A law of 1922 practically prohibited the importation of wheat flour save in exceptional cases, whereas that of wheat in the grain is restricted to shipments for certain purposes in quantities fixed annually in relation to requirements to be covered after harvest; 80 % of requirements is generally imported at harvest time to be mixed with home-grown wheat and the remainder when required. Imports are effected by the millers in proportion to their daily capacity. In 1931, the quota was fixed at 450,000 quintals, to be imported during the months of May, June and July, and of this quantity not more than 300,000 quintals was to be imported before the end of June. In 1932 the mills were authorised to import in May and June 350,000 quintals, a quantity which was increased on 6 June by 6,673 quintals, to be imported exclusively by those mills, which in 1931 bought a quantity of home-grown wheat corresponding to their capacity during 300 working days of 8 hours.

By a decree of 3 July 1931 the same restrictions were imposed on rye as on wheat but imports of this product have never been of any importance.

The quantities indicated above refer to the mainland of Portugal but the same measures are in force in the Azores, while in Madeira similar regulations have been in existence since 1900.

With respect to the other cereals, omitting oats, Portugal has to import annually fairly considerable quantities. Oats are exported.

The duties (except for wheat) are fixed in gold escudos and paid in escudos of the legal currency by multiplying the gold escudo by 24.45. A legal relation exists between the paper escudo and the British pound sterling. Besides the import duty there is also levied a supplementary tax amounting to 20 % of the former duty as well as a port tax of 1 paper escudo per quintal. In the following table are given the import duties together with the changes made since the beginning of 1930 (in so far as they are known to the Institute) in gold escudos per quintal:—

	Rye, barley, oats	Maize
6- 1-30 . . . . .	1.20	0.70
28-10-30 . . . . .	2.00	1.50
4- 4-31 . . . . .	2.60	2.00
26- 2-32 . . . . .	2.40	1.80

The latter duty no longer refers to rye. The minimum duties are those applied to shipments originating in countries having commercial treaties with Portugal. The general duties, which are more than double, are applied to commodities originating in Rumania, the U. S. S. R., Argentina and Australia.

The recent duties on wheat, expressed in escudos of the legal currency, are as follows :—

Quota, 1931. . . . .	80.00	escudos	per	quintal
1st quota, 1932, imports via Lisbon . . . .	72.00	»	»	»
»       »       »       via Oporto . . . .	70.00	»	»	»
2nd quota, 1932 . . . . .	72.00	»	»	»

## 22. — RUMANIA.

Rumania is amongst the most important cereal-exporting countries of Europe. Except in special cases there is no need for imports. At the same time, owing to climatic factors, years of great abundance are followed by others which leave only very small possibilities for export of one or the other cereal. The import duties which came into force on 30 July 1929 served principally to avoid disturbance of the internal markets for wheat, which might have resulted from the supplies at very low prices available from the U. S. S. R. Only on 14 September 1932 were these duties, augmented, as regards wheat, rye and their flour, following on the deficitary crop of that year. The duties, expressed in lei per quintal are as follows :—

	30-7-1929	14-9-1932
Wheat . . . . .	160	400
Rye . . . . .	45	400
Barley . . . . .	40	40
Oats . . . . .	36	36
Maize . . . . .	36	36
Flour of wheat and rye . . . . .	400	600

As regards exports it should be mentioned that, in the corollary to the treaty of commerce with France, that country has agreed to satisfy 10 % of its annual needs of foreign wheat from Rumania. This wheat, to be sold at the world price, will pay in France the minimum duty but a percentage (at maximum 30) will be recovered in order to make Rumanian production more remunerative.

The law of 23 July 1931 on the valorisation of agricultural products, afterwards modified, stipulates that an export bonus of 100 lei per quintal of wheat and 130 lei and later even 160 lei per quintal of wheat flour exported under special conditions will be given.

For the payment of the export bonuses there has been instituted a tax of 1 leu in the form of a stamp to be pasted on each loaf. At the beginning of 1932 the export bonus was abolished leaving in force only the stamp on the bread to be levied up to an amount sufficient to cover the bonuses.

Rumania for the longest time of any of the European countries maintained the system of export duties which are a very simple form of tax but have a very unfavourable influence on the prices paid to the producers. It is for this reason that they were abrogated as regards barley, on 30 June 1930 and, for the other cereals and milling derivatives, on 1 May 1931. These duties amounted, expressed in lei per truck load (generally one hundred quintals), to the following sums:—

	before 30-6-30	30-6-30/ 30-5-31
Wheat . . . . .	18,000	1,000
Rye . . . . .	10,000	1,000
Barley . . . . .	10,000	nil
Oats . . . . .	10,000	1,400
Maize. . . . .	10,000	1,400
Wheat flour . . . . .	10,000	} unchanged
Rye flour. . . . .	15,000	
Malt . . . . .	10,000	
Groats and semolina. . . . .	10,000	

It was decided at the same time, along with the abolition of the export duties to exempt the sale of cereals and their derivatives from certain registration and stamp taxes and to exempt sales for export of cereals and their derivatives from the turnover tax.

The same law lays down that an organisation of cereal-exporters is to be founded and that exemption of the export-duties is limited to the shipments made by the members of this organization the object of which is the regulation of exports.

### 23. — SWEDEN.

In Sweden the production of cereals, although, in the southern parts of the country at least, having a fairly considerable importance, does not suffice to cover the requirements of consumption. The customs tariff of 1911 already aimed at protecting home production by duties which at that time were not small. These duties are still the same, and amount for wheat, rye and barley to cr. 3.70 per quintal and for cereal flours to cr. 6.50 per quintal while oats and maize are exempt.

During the crisis these duties were no longer sufficient to guarantee to the producer a price corresponding to the cost of production. For this reason a royal decree of 16 January 1930 prescribed that all oats imported must be colored, unless intended for the manufacture of oat products. The principal purpose of this stipulation was to prevent the use of inferior quality foreign oats for seed purposes. A further Royal Decree of 13 June 1930 compelled millers to add certain percentages of home-grown cereals to breadmaking mixtures and also established a control of imports with the object of assuring the absorption of home-grown cereals.

The following are the milling percentages enforced by successive measures :—

	Wheat	Rye
4 July to 15 July 1930 . . . . .	45	50
16 July to 31 August 1930 . . . . .	55	60
1 September to 31 October 1930 . . . . .	60	70
1 November to 31 December 1930 . . . . .	75	85
1 January to 28 February 1931 . . . . .	80	95
1 March to 31 July 1931 . . . . .	85	95
1 August to 30 September 1931 . . . . .	80	95
1 October to 30 November 1931 . . . . .	70	60
1 December 1931 to 31 May 1932 . . . . .	60	40
1 June to 30 June 1932 . . . . .	50	30
1 July to 31 August 1932 . . . . .	60	30
1 September to 16 September 1932 . . . . .	80	90
17 September to 15 October 1932 . . . . .	85	97
16 October to 31 December 1932 . . . . .	90	97
1 January to 31 May 1933 . . . . .	95	97
1 June 1933 and subsequently . . . . .	98	98

The importer, on importing flour, is obliged to mix it with the flour from home-grown cereals in the same proportions as those stipulated for milling. For all mills of which the proprietors have declared themselves prepared to pay certain minimum prices for home-grown products of good quality, the percentage for mixing was fixed at a level 10 % lower than the figure fixed for the respective period. According to official statistics the millers who signed this agreement produce nearly 100 % of all wheat flour milled in the country and nearly 90 % of all rye flour.

Both parties to this agreement, but especially the millers, were opposed to this system so that other means were found to guarantee reasonable prices to the farmers. During the month of May 1931 the import of cereals was limited to a greater extent than was established by the decree of 13 June 1930, while a new decree of 29 May 1931, which came into force on 1 June, placed the entire regulation in the hands of a special organisation, the Swedish Cereal Company, which obtained the monopoly of importing wheat, rye, wheat flour and rye flour up to 31 December 1932. The Company agreed to buy, between 1 June and 31 July 1931 and during the corresponding months of 1932, all good quality home-grown wheat and rye which could be milled and which might be offered to it for sale before 15 June 1931 or 1 June 1932 respectively. The Company had in addition to assume the obligation of paying, at the time of purchase in June and July 1931, the minimum prices fixed for the month in question by the Government Commission for cereals and, at the time of purchase in June and July 1932, the prices which the Swedish Government might think fit to impose.

In 1932 further decrees were issued stipulating that the monopoly would remain in force until the end of 1933, while in addition the Company obtained the right to impose, on the import of the cereals, a certain compensatory tax

in order to cover its expenses and losses. On the other hand the Company again agreed to buy, at the minimum prices already fixed, all Swedish wheat and rye suitable for milling and to place it on sale before 1 June 1933.

Quite recently a new measure for assisting the cultivation of oats has been adopted. As from 1 June 1933 the mills which manufacture oat products (flakes, groats and meal) are compelled to use a minimum percentage of native oats in the process. For the months of June the percentage has been fixed at 40.

Another measure which also came into force on 1 June 1933 has an indirect influence on the position of the market for fodder crops. This refers to a consumers' tax of 2 crowns per quintal levied on oilcake and other similar feeds, the object being to increase the consumption of native products such as can take the place of products of foreign origin in cattle feeding.

To complete this résumé it remains to add that a Royal Decree of 13 April 1928 regulated the system of export certificates to be distributed on the export of wheat and rye in grain. These certificates, on which are recorded the sums which should have been paid as import duties had the same products been imported, are valid for six months and may be utilised in payment of the import duties on wheat or rye, in the grain or milled. This regulation, originally for a period ending on 31 July 1931, was prolonged until 31 July 1933. In addition there exists another measure, which came into force on 1 January 1930 and which brings immediate advantage to the millers only. The latter have obtained the right to import, after export of wheat flour or groats or of rye flour, a corresponding quantity of the same cereal whole.

#### 24. — SWITZERLAND.

In Switzerland production of cereals has always been smaller than consumption. The shortage of cereals for breadmaking became particularly grave during the war and the Federal Government in July 1915 decided to monopolize the import trade, sale and distribution of cereals. The high prices prevalent during the war and for some years afterwards encouraged farmers to grow more cereals. The Government, to avoid a recurrence of the war-time crop situation, encouraged production still further by granting a milling premium amounting to 5 to 8 francs per quintal of cereals for breadmaking sent to the mill for the use of the farmer himself. The amount of the premium varied in relation to the altitude of the farm and, in certain circumstances, supplementary premiums of 1 to 3 francs per quintal were also given. In this way the Monopoly sold cereals and flour at very high prices, which had to be paid by the bread consumer and the purchaser of cereals for livestock feed. As this involved a serious increase in expenditure for these groups it was considered advantageous to modify the system, so that on 1 July 1929 trade was made free.

Under the new system, the restrictions on the import trade were removed except in the case of flour for breadmaking, the trade in which has remained under the direct control of the State. As a rule wheat flour has not been imported.

The Government has undertaken to maintain a regular stock of 800,000 quintals of wheat, rye and spelt so as to have supplies for at least two months, in the event of import being impossible. In order to encourage home production it also buys the whole of the marketable production of the same cereals at prices which in general vary from 45 to 38 francs per quintal (prices on the farm) and are fixed yearly before the time of sowing. Millers are obliged to store in their elevators half of the Government's cereal reserve and also to buy and mill cereals bought by the Government from the farmers.

The only restriction on imports of cereals in the grain for breadmaking is the obligation on the importer to observe the Government's regulations concerning the sale of these cereals, or, in other words, to sell only to millers or to other importers in the same position.

As production of the other cereals could not, under the new system, receive such effective Government assistance, it has become very difficult during the present crisis, the result being that, while the area of bread cereals has changed very little, that of other cereals has decreased, as is shown in the following summary (in hectares):—

	Wheat and rye	Barley, oats and maize
Average 1923-27 . . . . .	65,600	28,200
1928. . . . .	71,400	28,300
1929. . . . .	71,300	28,500
1930. . . . .	74,500	27,900
1931. . . . .	72,700	26,500
1932. . . . .	73,700	24,500

In order to remedy this situation, the import of all cereals in the grain was from 12 May 1932 onward made subject to the production of a special licence, which was generally, however, given to regular importers up to the quota usually imported by them.

From 15 August onward this measure was extended so as further to reduce freedom of sale, etc., by importers; all imports were to be controlled by the Central Office for Wheat and Fodder Meals and only members of this Office could obtain import licences. There was at the same time a quota allocation, which, while in general maintaining the possibility of importing 100 % of the quantity previously imported, restricted imports from certain places of origin.

Lastly, on 1 April 1933 the character of the import organisation was changed: the Swiss Cooperative Society for Cereals and Feedingstuffs has obtained strict control of imports and of quota allocation for wheat and rye and has become the sole importer of other cereals.

It should be added that theoretically it was possible before 12 May 1932 to import without control by State organisations but it was necessary to pay 20.00 francs per quintal in addition to the very low customs duty.

The import duties have, during the last decade, remained very low and at the same level as those fixed in the Customs Tariff of 1921. They are given below:—

Wheat, rye, barley, oats . . . . .	0.60 francs per quintal
Maize . . . . .	0.50   "   "   "
Cereal flours . . . . .	4.50   "   "   "

In 1927 a supplementary duty was imposed on malting barley of 8.85 francs per quintal to which, on 22 March 1932, was added another supplementary duty of 15.50 francs so that the present payment is 24.85 francs. For maize a supplementary duty of 3.00 francs was introduced on 6 September 1932 and subsequently, on 18 October, changed to 4.00 francs, giving a total duty of 4.50 francs; for oats, as from 11 April, a supplementary duty of francs 4.00 is levied, making a total of francs 4.60.

## 25. — CZECHOSLOVAKIA.

*Introduction.* — Cereal production is of great importance to the Czechoslovakian Republic but, for all of the principal kinds except barley and oats, there is still an import surplus. The following figures are typical of the situation, for the quinquennial period 1923-27 (area in thousands of hectares, production, import surplus (+) and export surplus (—) in thousands of quintals):—

	Area	Production	Surplus
Wheat . . . . .	721	11,568	+ 5,530
Rye . . . . .	1,015	15,488	+ 1,448
Barley . . . . .	692	11,622	— 1,071
Oats . . . . .	829	13,108	— 109
Maize . . . . .	139	2,457	+ 2,655

Cereal production was protected before the war in the Austro-Hungarian Empire and was well developed especially on the large estates then in existence. But with the land reform and the division of these estates into small farms, it became difficult to obtain the same results. The tendency in the Republic, as in the other Succession States, was to protect all industries and enterprises worthy of assistance, in order to attain for a much smaller territory a position of stability comparable with that of the pre-war period. The protection of cereal production was in accordance with such a policy. It was first organized by the law of 4 June 1925, which established a sliding scale of duties to be fixed each month in relation to the average price of cereals on the principal markets of the country, and later, as this law did not give satisfactory results, by a new law of 22 June 1926. This law (which came into force on 14 July 1926) in the first place fixes maximum duties which, however, were never enforced, and in another clause minimum duties which have been applied to imports. Owing to the fall in prices on the free markets, however, this protection was in 1930 inadequate and under the law of 5 June 1930 the sliding scale was again introduced. From 6 July a supplementary duty was added to the minimum duties on wheat, rye, barley, oats in the grain, as well as on all flour and other milling products of cereals, to be varied in accordance with the average quarterly price of each of these products, subject to a comparison of this average price with the average price less 11 % of the same product on the Prague market in the period 1925 to 1929. The law, moreover, fixes maxima for these supplementary duties, which, together



with the minimum duties of the law of 1926, are given below (in Czechoslovakian crowns per quintal):—

	Basic duty	Supplementary duty maxima
Wheat . . . . .	30.00	25.00
Rye . . . . .	38.00	50.00
Barley . . . . .	34.00	36.00
Oats . . . . .	36.00	34.00
Flours and other milling products of cereals . . . . .	70.00	75.00

The supplementary duties on wheat, on rye and on flours, etc. could not take immediate effect because the minimum duties were fixed in the commercial treaty with Hungary. The latter treaty was terminated in order to obtain greater liberty in this respect, so that from 15 December 1930 onwards the duties have been active also in respect to shipments for countries enjoying most favoured nation treatment.

For maize there are no supplementary duties. The minimum duty, also fixed in the commercial treaty with Rumania, amount to 18 kč., except for the duty on fodder maize, recognised as such, which is only 6.00 kč.

To avoid any encouragement of speculation under the sliding scale, another law of June 1930 introduced fresh regulation by import certificates or "Einfuhrscheine".

Against exports of rye, barley, oats and several other agricultural products, the exporter is, subject to certain conditions, granted certificates entitling the holder to import free of duty, within nine months, the quantity of wheat, rye, barley, oats, maize, flour, and other cereal milling derivatives, besides certain other products, corresponding to the customs value of the import certificate. This value is fixed at 38.00 kč. per quintal of rye exported, 30.00 kč. for barley and 36.00 kč. for oats. In addition, millers may, on their own account, obtain certificates for the export of flour and other milling products of wheat, rye, barley and oats, as well as for the products of their own farms in the country. These certificates amount in value to the minimum duty (exclusive of supplementary duty) to be paid on the import of a corresponding quantity of the same cereal in the grain.

The changes made in the regulations of 1926 consist principally of the issuing of certificates for exports of barley and certain other products and the granting of the possibility of using the certificates for payment of the duties on flour.

Other measures, in part comprised in the law already mentioned on supplementary customs duties as well as in the two laws of 10 April 1930 (coming into force on 24 April) and a law of 7 November (coming into force partly on 11 and partly on 26 November), give assistance of a more internal character. The first law prohibits the sale of chemically bleached flour. One law of 10 April obliges the public offices and institutions to meet their requirements of cereals in the grain (exclusive of maize), of flour and of other milling products, as well as of a number of other agricultural products, exclusively by purchase of the home product. The object of the second law is to facilitate, to some extent,

the sale of home-grown rye by increasing the consumption of rye flour. This was to be accomplished by encouraging the manufacture of bread made of unmixed rye flour, by the prohibition of the making of bread with rye flour mixed with more than 10 % of suitable wheat flour and, lastly, by fixing a maximum bolting percentage of 65 %. It was no longer permissible to use mixtures in the manufacture of this bread.

The law of 7 November concerns the compulsory milling of home-grown wheat and rye. It states that all flour freely traded in within the country must contain at least 75 % of flour milled from home-grown wheat. For rye flour the minimum percentage is as high as 95 %. All imported wheat and rye must be mixed before entering into the trade, the mixture thus containing at least the same percentage of the home-grown product. This law expired on 31 August 1931.

It should further be mentioned that, besides the import duties, turnover taxes are also levied on imports. These taxes on 1 January 1931 amounted for wheat and barley, to 1.50 Kč. per quintal and for rye, oats, maize and flour respectively, to 1.80, 2.20, 2.50 and 5.00 Kč.

From 11 November onward, the supplementary duties reached the maxima given above. It should also be noted that from March 1931 onward these duties were again fixed monthly. The decrees are, in general, published 5 days before entering into force.

The import of rye, barley and flour of these cereals from 3 March 1930, and that of wheat, maize, wheat flour, oat meal and maize meal from 29 December 1930 are subject to the production of a special import licence.

A description is given below of all the important measures taken after end of 1930 in so far as at present known at the Institute.

*Wheat and its derivatives.*

- A. 1 (25-3-31) Wheat and cereal flours: supplementary duty unchanged; that on wheat in the grain remained at the maximum throughout the period under consideration.
- A. 2 (9-4-31) Cereal flour: supplementary duty: Kč. 74.00.
- A. 3 (9-5-31) Wheat flour: supplementary duty: Kč. 65.00.
- E. 1 (18-5-31) Minimum percentage of home-grown wheat for milling 50 % (reg. in force until 31-7-31).
- A. 4 (4-6-31) Wheat flour: supplementary duty: Kč. 51.00.
- C. 1 (2-7-31) Interministerial commission for the authorisation of imports of cereals and cereal flours constituted. The Commission to fix each month in accordance with the interests of agriculturists as well as of consumers the quota to be imported. These quotas are not known to the Institute. The Commission has the power to grant import licences depending upon the purchase of the same products of home origin.
- E. 2 (31-8-31) Law of 7-11-30, concerning the minimum proportion of home-grown flour for milling, expired.
- A. 5 (9-7-31) Cereal flours: supplementary duty: Kč. 41.00.

- B. 1 (26-7-31) Payment for import licence of whole cereals, flour, etc., 1 % *ad valorem*.
- A. 6 (9-8-31) Cereal flours: supplementary duty: kč. 29.00.
- A. 7 (9-9-31) Cereal flours: supplementary duty: kč. 47.00.
- A. 8 (10-10-31) Cereal flours: supplementary duty: kč. 53.00.
- A. 9 (10-11-31) Cereal flours: supplementary duty: kč. 55.00.
- A. 10 (8-12-31) Cereal flours: supplementary duty: kč. 52.00.
- E. 3 (31-12-31) The law of 10-4-30, the regulations of which were no longer in force, provisionally abrogated.
- B. 2 (1-1-32) Turnover tax modified:—
- |   |       |                   |
|---|-------|-------------------|
| Wheat and barley . . . . .                  | 1.5 % | <i>ad valorem</i> |
| Rye. . . . .                                | 1.8 % | » »               |
| Oats . . . . .                              | 2.2 % | » »               |
| Maize. . . . .                              | 2.5 % | » »               |
| Flour and other cereal derivatives. . . . . | 5.0 % | » »               |
- A. 11 (10-1-32) Cereal flours: supplementary duty: kč. 50.00.
- A. 12 (10-3-32) Cereal flours: supplementary duty: kč. 54.00.
- A. 13 (6-4-32) Cereal flours: supplementary duty: kč. 55.00.
- B. 3 (1-6-32) Turnover tax modified:
- |  |       |                   |
|--|-------|-------------------|
| Wheat . . . . .                        | 2.5 % | <i>ad valorem</i> |
| Wheat and barley . . . . .             | 2.5 % | » »               |
| Rye. . . . .                           | 2.2 % | » »               |
| Oats . . . . .                         | 1.8 % | » »               |
| Maize. . . . .                         | 1.5 % | » »               |
| Flours and other derivatives . . . . . | 8.0 % | » »               |
- A. 14 (9-7-32) Cereal flours: supplementary duty: kč. 56.00.
- C. 2 (28-7-32) Import of cereals and their flours subjected to control and quota-fixing by a private company, the "Syndicate for the Import of Cereals" consisting of representatives of five large organisations interested in the import of these products. The Government has concluded an agreement with the Syndicate, giving it the power of fixing the quotas each month in accordance with internal prices. These prices are, for the qualities and types, normal in Prague: wheat, minimum: kč. 150.00; maximum kč. 175.00; rye, minimum: kč. 132.50; maximum: kč. 152.50. The quotas are not known to the Institute.
- B. 4 (28-7-32) The Syndicate for the Import of Cereals to levy duties: whole cereals other than maize: kč. 1.00; maize: 12.00; flours, etc. of cereals: kč. 2.50.
- A. 15 (10-8-32) Cereal flours: supplementary duty: kč. 58.00.
- D. 1 (12-8-32) All the preceding regulations concerning import licences abrogated. An exchange certificate to be obtained for imports.
- A. 16 (6-9-32) Cereal flours: supplementary duty: kč. 61.00.
- A. 17 (10-10-32) Cereal flours: supplementary duty: kč. 63.00.
- A. 18 (10-11-32) Cereal flours: supplementary duty: kč. 65.00.

E. 4 (14-12-32) The law of 10-4-30 concerning breadmaking again brought into force.

A. 19 (10-1-33) Cereal flours: supplementary duty: kč. 68.00.

A. 20 (9-3-33) Cereal flours: supplementary duty: kč. 74.00.

A. 21 (9-3-33) Cereal flours: supplementary duty: kč. 75.00.

*Rye and its derivatives.*

A. 1 (25-3-31) Rye and rye flour : supplementary duty unchanged. For modifications in supplementary duties on flour and other milling derivatives of rye, see Wheat.

A. 2 (9-5-31) Rye : supplementary duty : kč. 46.00.

A. 3 (15-5-31) Rye : owing to scarcity of rye for breadmaking, duty provisionally reduced by kč. 25.00 on the total published as basic duty and supplementary duty (reduction in force until 30-6-31).

E. 1 (18-5-31) Minimum percentage of home-grown rye for milling: 10 % (reg. in force until 31-7-31).

E. 2 (18-5-31) The addition of 25 % of wheat flour to rye flour for the baking of rye bread, is allowed.

G. 1 (22-5-31) Rye : owing to scarcity of rye for breadmaking, export subject to the production of a special licence until the new crop available.

A. 4 (4-6-31) Rye : supplementary duty kč. 30.00.

C. 1 (2-7-31) See C. 1 wheat.

A. 5 (9-7-31) Rye : supplementary duty : kč. 19.00.

B. 1 (26-7-31) See B. 1 wheat.

A. 6 (9-8-31) Rye : supplementary duty kč. 17.00

E. 3 (31-8-31) See E. 2 wheat.

A. 7 (9-9-31) Rye : supplementary duty kč. 19.00

A. 8 (10-11-31) Rye : supplementary duty kč. 18.00

A. 9 (8-12-31) Rye : supplementary duty kč. 15.00.

E. 4 (31-12-31) See E. 3 wheat.

B. 2 (1-1-32) See B. 2 wheat.

A. 10 (10-3-32) Rye : supplementary duty kč. 20.00.

A. 11 (10-4-32) Rye : supplementary duty kč. 22.00.

A. 12 (8-5-32) Rye : supplementary duty kč. 24.00.

B. 3 (1-6-32) See B. 3 wheat.

A. 13 (5-7-32) Rye : supplementary duty kč. 27.00

C. 2 (28-7-32) See C. 2 wheat.

- B. 4 (28-7-32) See B. 4 wheat.
- A. 14 (10-8-32) Rye : supplementary duty kč. 29.00.
- D. 1 (12-8-32) See D. 1 wheat
- A. 15 (6-9-32) Rye : supplementary duty kč. 39.00.
- A. 16 (10-10-32) Rye : supplementary duty kč. 48.00.
- A. 17 (10-11-32) Rye : supplementary duty kč. 50.00.
- E. 5 (14-12-32) See E. 4 wheat.

*Barley and its derivatives.*

- A. 1 (25-3-31) Barley, barley meal, etc. : supplementary duty barley kč. 35.00.  
supplementary duty meal, etc., unchanged. For the latter duty see  
wheat.
- A. 2 (9-4-31) Barley : supplementary duty kč. 28.00.
- A. 3 (9-5-31) Barley : supplementary duty kč. 22.00.
- A. 4 (6-6-31) Barley : supplementary duty kč. 19.00.
- C. 1 (2-7-31) See C. 1 wheat.
- A. 5 (9-7-31) Barley : supplementary duty kč. 23.00.
- B. 1 (26-7-31) See B. 1 wheat.
- A. 6 (9-8-31) Barley : supplementary duty kč. 34.00.
- A. 7 (9-9-31) Barley ; supplementary duty kč. 36.00.  
The supplementary duty on barley from this date has remained the same  
throughout the period under consideration.
- B. 2 (1-1-32) See B. 2 wheat.
- B. 3 (1-6-32) See B. 3 wheat.
- C. 2 (28-7-32) See C. 2 wheat.
- B. 4 (28-7-32) See B. 4 wheat. The payment for import licence on maize to be  
used to assist the domestic cultivation of barley.
- D. 1 (12-8-32) See D. 1 wheat.

*Oats and oat derivatives.*

- A. 1 (23-3-31) Oats and oat meal, etc. : supplementary duty unchanged. For  
modifications in the supplementary duties on meal and other oat mil-  
ling derivatives see wheat.
- A. 2 (9-4-31) Oats : supplementary duty kč. 27.00.
- A. 3 (9-5-31) Oats : supplementary duty kč. 14.00.
- A. 4 (4-6-31) Oats : supplementary duty kč. 2.00.

- C. 1 (2-7-31) See C. 1 wheat.
- A. 5 (9-7-31) Oats : supplementary duty abolished.
- D. 1 (9-7-31) Oats : import subject to production of a special licence.
- B. 1 (26-7-31) See B. 1 wheat.
- A. 6 (9-9-31) Oats : supplementary duty kč. 7.00.
- A. 7 (10-10-31) Oats : supplementary duty kč. 18.00.
- A. 8 (10-11-31) Oats : supplementary duty kč. 29.00.
- A. 9 (8-12-31) Oats : supplementary duty kč. 30.00.
- B. 2 (1-1-32) See B. 2 wheat.
- A. 10 (10-1-32) Oats : supplementary duty kč. 33.00.
- A. 11 (10-2-32) Oats : supplementary duty kč. 34.00. The supplementary duty on oats from this date has remained the same throughout the period under consideration.
- B. 3 (1-6-32) See B. 3 wheat.
- C. 2 (28-7-32) See C. 2 wheat.
- B. 4 (28-7-32) See B. 4 wheat.
- D. 2 (12-8-32) See D. 1 wheat.

*Maize and its derivatives :*

- A. 1 (25-3-31) No supplementary duty on maize. For the supplementary duty on maize meal and other milling derivatives see wheat.
- C. 1 (2-7-31) See C. 1 wheat.
- B. 1 (26-7-31) See B. 1 wheat.
- B. 2 (1-1-32) See B. 2 wheat.
- B. 3 (1-6-32) See B. 3 wheat.
- C. 2 (28-7-32) See C. 2 wheat.
- D. 1 (15-2-32) Issue of import licences subject to availability of exchange.
- B. 4 (28-7-32) See B. 4 wheat.
- D. 2 (12-8-32) See D. 1 wheat.

26. — YUGOSLAVIA.

Yugoslavia is a cereal-exporting country which has been severely affected by the crisis. Prices were in 1930, owing to the large quantities offered for sale immediately after the harvest, 30 to 45 dinars below what would have been normal in relation with prices then ruling on the principal markets of Western Europe.

The Government, in order to improve the situation, founded the " Privileged Company for the Export of Agricultural Products ", which during its first year of working (10 June 1930 to 9 June 1931) purchased from growers and exported abroad 568,000 quintals of wheat and 1,595,000 quintals of maize, representing nearly one half of the Yugoslavian wheat export and over 40 % of that of maize during this period.

The poor financial results of this Company were in part attributed to the existence also of unregulated trading. Accordingly a new law, which entered into force on the day of its promulgation (27 June 1931), reserved to the State and its organisations the monopoly of the import and export trade in cereals. The State entrusted the transaction of its business to the Privileged Company while, on 4 July, a further measure made it possible to reserve to the State and to organisations acting on its behalf the exclusive right to purchase wheat, rye and wheat flour temporarily and in case of necessity for districts to be determined at the given time. In accordance with these measures the Company was authorised to buy directly from producers and agricultural cooperative societies any quantity of wheat at a price not below 160 dinars per quintal (for average quality).

From 31 March 1932 onward regulation of the cereal trade has again been withdrawn.

The Company also undertook the regulation of the import trade with France in each commercial year in accordance with the commercial treaty existing between the two countries, stipulating that France should cover 10 % of its requirements in Yugoslavia at world prices and on payment of the minimum duty, with the repayment, however, of not more than 30 % of this total sum for the purpose of assuring a remunerative wheat price to the Yugoslav farmer. The Company has also concluded special agreements with Czechoslovakia and Austria.

The following indication may be made of the customs duties and other import charges.

The import duties have been increased several times, as may be seen from the summary given below, which does not include, however, the conventional duties ruling in 1929 and 1930 under the treaty with Albania. These duties, during most of the period mentioned, were not effective, but merely served to indicate the maximum which could be levied on Albanian shipments in the event of Yugoslavia desiring to increase the duties. The following are the minimum duties which in practice are the only ones levied (expressed in gold dinars per quintal) :—

	Wheat	Rye	Barley	Oats	Maize	Cereal flour
13- 8-25 . . .	2.50	2.50	1.50	1.50	1.25	4.00
14- 4-28 . . .	..	..	..	..	..	10.00
14-11-28 . . .	..	..	..	..	..	8.00
6-11-30 . . .	5.00	..	3.00	3.00	2.50	..
10- 2-31 . . .	10.00	10.00	..	..	5.00	..
12-11-31 . . .	..	..	6.00	..	..	..

The duty of 8.00 gold dinars of 14 November 1928 was a conventional duty under the commercial treaty with Italy and remained in force until 1 September 1932 (duty from this date onward: 16.00 gold dinars).

Besides these duties turnover taxes are levied on imports, differing from the taxes levied on business transactions within the country. These taxes, expressed in percentages *ad valorem* (for the products imported, including the import duty), are as follows (coming into force 1-8-31):—

	Import tax	Internal trade tax
Cereals in the grain. . . . .	2 %	1 %
Cereals flour . . . . .	2.8 %	2.2 % of the price of the quantity of cereals (in the grain) used.

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## CORRIGENDA

for the *Monthly Bulletin of Agricultural Economics and Sociology*,  
No. 8, August 1933.

*On page 325-E read:*

B. 2 (1-1-32) Turnover tax modified:—

Wheat and barley . . . . .	Kč. 1.50 per quintal
Rye. . . . .	» 1.80 » »
Oats . . . . .	» 2.20 » »
Maize. . . . .	» 2.50 » »
Flour and other cereal derivatives. . . . .	» 5.00 » »

B. 3 (1-6-32) Turnover tax modified:—

Wheat and barley . . . . .	Kč. 2.50 per quintal
Rye. . . . .	» 2.20 » »
Oats . . . . .	» 1.80 » »
Maize. . . . .	» 1.50 » »
Flours and other cereal derivatives. . . . .	» 8.00 » »

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# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

### ECONOMIC AND SOCIAL CONDITIONS OF THE AGRICULTURAL CLASSES

#### The Migration Problem in its Relation to Agriculture.

##### COURSE OF THE MIGRATION MOVEMENT IN PRE- AND POST-WAR TIMES.

The economic transformation which took place in the middle of last century was accompanied by an immense migration of population alike from country to country and within the boundaries of the separate countries. The two types of migration were closely linked together, and it is impossible to consider one apart from the other.

In proportion to the progress of industrialisation in a country the *internal migration* became generally increasingly marked, the migration, that is to say, from the agricultural to the non-agricultural occupations, from the country to the town. This migration was generally known as the *rural exodus* or "flight from the land." Its significance and consequences, but especially its causes, were much in dispute. That the causes are to be sought in the differences between rural and town conditions is obvious. Attracted by the free and stirring life in towns and industrial centres, the young people, in particular, abandoned agriculture and the land, and endeavoured to improve their social and economic position. The many laments over the rural exodus were justified by the fact that it was not merely the densely populated areas of small farming which supplied the stream of migrants, but also the sparsely settled districts of large farms. Hence while in the areas of small farming the migration was recognised as bringing some relief in the situation, the consequence in the less densely populated districts was shortage of labour. But as the wage-paying capacity of these districts was determined by the competition with districts where the natural and economic conditions were more favourable, retention of the workers on the land by the method of wage increases was only possible to a limited extent. Land settlement would have provided an outlet, but settlement on any large scale was non-existent in European countries. Depopulation accordingly went on and the permanent workers who were no longer available were replaced by seasonal labour, with the result that the migration of seasonal workers took on dimensions previously unknown.

In the industrial countries belief in the fundamental importance of agrarian economy and of the agricultural population began to be shaken. The supply

of food was easily assured by the export of industrial products of high value. Difficulties from shortage of farm labour were met by engagement of seasonal migratory labour or there was always the alternative of allowing the land to relapse to extensive cultivation. Industrialisation was the order of the day: in fact it seemed to offer the only possibility of absorbing the immense increase of population that went on during last century.

On the other hand industrialisation and the migration movement could not of course have assumed the forms they did, apart from the population increase of that time. The concentration in large towns and industrial districts could not fail to accentuate the cleavage between the agricultural and the non-agricultural population. The town became the deciding influence on technical as well as on general educational progress, and the town moreover assumed political mastery over the country. The rural, especially the agricultural population, was in low esteem; the rising generation would have nothing to do with the land.

Different conditions prevailed in those countries of Europe where the basis was agrarian. For their population increase room was found in their own agriculture, and in consequence of the growing excess food requirements of the industrial countries their agriculture could proceed to remarkable advances in production. Here and there industries were set up, and these could absorb the new labour forces.

A greater, or at least as great an importance, attached to *seasonal or permanent emigration*. As time went on the numbers increased of those who went as emigrants to other European countries, there to take up farm work abandoned by the workers of that country in favour of industrial occupations or themselves to find a living as industrial workers. Much greater, however, indeed almost unlimited, was the absorption capacity of the overseas lands for immigrants. An unhindered expansion of agriculture went on in these countries, and every fresh expansion created a demand for more labour, and at the same time led to an increase in the labour requirements of the other branches of economy. When in the last pre-war decade the absorption capacity of agriculture diminished, in several of the overseas countries industrialisation began to gain ground, with a noticeable effect on the component elements in the immigration, although not on its extent. Among the overseas immigration countries the United States held an exceptional position. It was not merely the most important of the immigration countries, but within its borders there was a very large movement from country to town, and also a marked accession of foreigners into both urban and rural districts.

If the immense range of the pre-war migration movement had many prejudicial consequences of a political and social character, the advantages were none the less great. Apart from this movement, the economic transformation of the world could not have been contemplated, and hence no country so much as thought of placing serious obstacles in the way of the migrations. This applies equally to internal migration as to inter-state emigration and immigration. Freedom of international migration was an essential element in the relations of the separate countries and a corollary of the freedom of international trade.

The migration movement of the pre-war time was abruptly checked by the war. But scarcely was the war ended and the world entered with renewed hopes on the work of reconstruction, than the stream of migration once more set in following the same direction. *Internal migration*, especially in the industrialised countries, assumed even larger dimensions than in pre-war times. Industry and trade attracted ever widening circles of the rural population. This migration from the rural areas was felt at first as a relief of the situation, since in the first years after the war there was an abundant supply of agricultural labour. In addition, the disparity between prices of agricultural products and wages made obligatory an extensive reduction in the employment of labour. The wages paid by the industries everywhere springing up or in course of development could not possibly be reached in agriculture. Gradually difficulties in obtaining farm labour began to appear. In all systematic farming and farm organisation the question of economy in labour became of increasing importance. The chief outcome of this was the further speeding up of mechanisation and rationalisation.

The migration from the country still continued even when the signs of the economic crisis were becoming noticeably clearer and the unemployment figures were increasing. The laments over the rural exodus were thus doubly justified, and it is easy to understand the fact that endeavours were made in different countries to limit the migration from the land even by compulsory measures. But the increase in industrial unemployment soon put bounds to this migration and the "flight from the land" was gradually replaced by a "flight from the town". In the very countries, from which arose the most lively protests about the urbanisation of the population and the depopulation of the country side, the new trend of migration assumed its greatest extent. "Back to the land" has become the universal solution: in all countries, whether agrarian or industrial, the same cry is heard. Already sporadic endeavours were being made to bring back sections of the population from the town to the country.

Although the new migration trend has been in existence for over two years, it is still much in dispute. In no country are there adequate data as to its extent. From some survey of the movement on the different countries, the conclusion is reached that, with the possible exception of the United States, the phrase «flight from the town» as opposed to the «flight from the land» which was the designation of the earlier internal migration trend, implies not so much a flight out of the town as rather the cessation or marked decline of the migration towards the towns and generally of the internal migration, and can only be applied in this sense.

As regards *interstate migration* this was reduced towards the end of the war to a minimum. On the conclusion of the war the return of emigrants which during the war had been completely checked was resumed and to an unprecedented extent. At the same time owing to political causes a marked shifting of population took place. The establishment of new boundaries together with the provision made in the Peace Treaties for an option for individuals in respect of nationality had the effect of increasing migration. Thus, for example, considerably over one million Germans, from 230,000 to 250,000 Hungarians and over 100,000

\* *Ec. 9 Ingl.*

*Transoceanic and continental migrations of nationals and of aliens*

COUNTRIES	1913	Annual averages 1920-24
<i>United States:</i>		
Transoceanic emigration of nationals . . . . .	...	38,177
Continental emigration of nationals . . . . .	...	18,038
Transoceanic immigration of aliens . . . . .	1) 1,112,164	394,144
Transoceanic emigration of aliens . . . . .	1) 260,218	148,914
Continental immigration of aliens . . . . .	...	157,747
Continental emigration of aliens . . . . .	...	7,767
<i>Canada:</i>		
Continental immigration of nationals . . . . .	...	...
Transoceanic immigration of aliens . . . . .	303,087	85,658
Continental immigration of aliens . . . . .	...	30,362
<i>Argentina:</i>		
Transoceanic and continental immigration of aliens . . . . .	302,047	132,325
Transoceanic and continental emigration of aliens . . . . .	156,829	46,636
<i>Brazil:</i>		
Transoceanic and continental immigration of nationals . . . . .	...	...
Transoceanic immigration of aliens . . . . .	190,333	74,049
Transoceanic and continental emigration of nationals and aliens . . . . .	...	33,774
Continental immigration of aliens . . . . .	...	...
<i>Union of South Africa:</i>		
Transoceanic immigration of aliens 2) . . . . .	14,251	3) 16,863
Transoceanic and continental emigration of nationals and aliens . . . . .	...	3) 12,722
Continental immigration (statistics of labour contracts) 4) . . . . .	...	...
<i>Australia:</i>		
Transoceanic immigration of nationals and aliens . . . . .	141,906	3) 90,827
Transoceanic emigration of nationals and aliens . . . . .	87,131	3) 62,169
Continental immigration of nationals and aliens . . . . .	...	...
Continental emigration of nationals and aliens . . . . .	...	...
<i>New Zealand:</i>		
Transoceanic immigration of aliens . . . . .	...	14,538
Transoceanic emigration of nationals and aliens . . . . .	...	2,605
Continental immigration of aliens . . . . .	...	1,709
Continental emigration of nationals and aliens . . . . .	...	1,536

1) Fiscal year.

2) From 1927 onwards, transoceanic and continental immigration.

3) Travellers.

4) Native workers recruited outside the Union.

*Sources.* — League of Nations, *International Statistical Year-Book 1928*, Geneva 1929; *Statistics of Emigration and Immigration International Labour Review*, Vol. XXVII, No. 1, January 1933, Geneva 1933, and for 1933 the statistics also published by the International Labour Office in *Industrial and Labour Information*.

*Note.* — Transoceanic or overseas migrations include all migration by sea from one of the five continents of the world to another, as well as migration between North and South America. Continents



in certain European and extra-European countries (1913 and 1920-32).

1925	1926	1927	1928	1929	1930	1931	1932
15,194	15,797	11,223	6,074	5,829	4,128	2,828	...
10,235	12,385	11,563	15,358	17,614	16,611	17,165	...
169,515	179,013	176,744	170,470	174,211	135,437	31,642	...
75,848	68,061	68,677	69,384	41,956	42,947	56,010	...
121,211	157,282	147,141	119,467	94,730	48,794	11,711	...
5,841	5,118	6,445	8,215	11,217	9,983	33,560	...
39,987	62,293	42,078	34,120	30,479	31,608	20,352	...
67,190	115,040	135,066	136,849	133,142	79,174	12,335	...
17,717	20,944	23,818	29,933	31,852	25,632	15,195	...
125,366	135,011	161,548	129,047	140,086	124,006	56,333	...
49,841	55,769	57,936	54,262	58,365	59,734	53,677	...
...	...	3,594	3,933	4,238	4,456	3,945	...
81 613	117,714	96,880	76,586	94,931	61,099	26,183	...
...	...	41,573	39,702	...	...	...	...
...	...	1,094	1,542	1,255	1,517	1,282	...
5,428	6,575	7,341	7,819	8,838	7,101	5,023	...
6,041	6,137	7,255	7,909	15,047	5,699	4,747	...
...	40,968	46,187	74,943	166,784	192,994	...	...
52,235	55,923	61,655	43,933	28,539	15,301	7,862	...
12,360	13,201	13,773	15,446	17,177	21,553	17,989	...
4,242	3,541	5,423	4,300	3,159	2,236	1,579	...
4,547	4,232	4,159	4,202	4,749	6,212	3,876	...
13,685	15,981	9,818	4,817	4,321	4,752	1,563	...
728	868	1,188	1,413	1,387	1,216	1,968	...
2,019	1,887	1,509	1,522	2,022	2,166	1,673	...
1,218	2,713	2,957	2,541	7,706	1,233	724	...

migrations include all migrations by sea or by land within each continent, North and South America being taken separately. Thus, for example, emigration from Australia to New Zealand is considered as being continental.

As the immigration of "nationals" represents mainly repatriation of nationals who have temporarily emigrated, the difference between the two groups of nationals (i.e. emigrated and immigrated) gives the net emigration. Similarly, the difference between the number of alien immigrants and of alien emigrants gives the net immigration.

The average figures given for 1920-24 represent averages of figures available during this period.

For further details and explanatory notes, see Statistics of Emigration and Immigration, *International Labour Review*, Vol. XXVII, No. 1, January 1933, Geneva 1933.

*Transoceanic and continental migrations of nationals and of aliens*

COUNTRIES	1913	Annual averages 1920-24
<i>Germany:</i>		
Transoceanic emigration of nationals . . . . .	25,843	48,205
Transoceanic immigration of nationals (travellers arrived) . . . . .	...	...
Continental emigration of nationals . . . . .	...	...
Transoceanic emigration of aliens . . . . .	...	...
Continental immigration of aliens (identity card statistics) . . . . .	...	...
<i>Belgium:</i>		
Transoceanic emigration of nationals . . . . .	7,590	2,525
Transoceanic immigration of nationals . . . . .	...	1,275
Continental emigration of nationals . . . . .	...	21,669
Continental immigration of nationals . . . . .	...	10,483
Transoceanic immigration of aliens . . . . .	...	1,112
Transoceanic emigration of aliens . . . . .	...	520
Continental immigration of aliens . . . . .	...	24,195
Continental emigration of aliens . . . . .	...	10,553
<i>France:</i>		
Transoceanic emigration of nationals . . . . .	...	2,080
Continental immigration of aliens . . . . .	...	164,427
Continental emigration of aliens . . . . .	...	46,715
<i>Irish Free State:</i>		
Transoceanic emigration of nationals . . . . .	...	16,236
Transoceanic immigration of nationals . . . . .	...	2,789
Transoceanic immigration of aliens . . . . .	...	...
Transoceanic emigration of aliens . . . . .	...	...
<i>Italy 2):</i>		
Transoceanic emigration of nationals . . . . .	559,566	172,471
Transoceanic immigration of nationals . . . . .	188,987	66,458
Continental emigration of nationals . . . . .	...	182,622
Continental immigration of nationals . . . . .	...	65,521
<i>Poland:</i>		
Transoceanic emigration of nationals . . . . .	...	55,577
Transoceanic immigration of nationals . . . . .	...	33,325
Continental emigration of nationals . . . . .	...	33,708
Continental immigration of nationals . . . . .	...	...
<i>United Kingdom 3):</i>		
Transoceanic emigration of nationals . . . . .	389,394	214,067
Transoceanic immigration of nationals . . . . .	85,709	69,433
Transoceanic immigration of aliens . . . . .	...	...
Continental immigration of aliens . . . . .	...	2,732
<i>Czechoslovakia:</i>		
Transoceanic emigration of nationals . . . . .	...	13,104
Transoceanic immigration of nationals . . . . .	...	3,715
Continental emigration of nationals . . . . .	...	28,421
Continental immigration of nationals . . . . .	...	...
Transoceanic immigration of aliens . . . . .	...	...

2) The identity card statistics are based on the number of identity cards issued to foreign workers by the German Central Office for Workers (*Deutsche Arbeitszentrale*); they do not give a complete record of continental immigration, particularly as the activity of the Office does not extend to the States of Bavaria, Saxony, Württemberg, Baden, Oldenburg and Bremen.

certain European and extra-European countries (1913 and 1920-32).

1925	1926	1927	1928	1929	1930	1931	1932
62,154	64,001	60,861	56,566	48,441	37,199	13,513	10,325
...	...	38,271	45,075	38,463	43,097	40,417	...
...	...	518	675	293	200	131	...
910	1,139	1,268	992	1,032	4,998	942	...
...	...	130,584	135,923	125,388	109,421	50,141	...
2,495	3,672	3,498	2,497	3,088	2,564	1,292	...
1,033	1,112	1,252	1,476	1,486	1,732	2,159	...
18,399	18,966	13,149	12,181	10,455	9,901	7,124	...
9,421	8,865	8,365	7,587	7,460	7,695	6,687	...
1,732	1,604	1,579	1,880	1,643	1,765	1,181	...
803	742	1,141	788	1,225	1,045	444	...
34,734	32,944	29,973	31,034	45,006	43,217	22,018	...
13,376	13,405	12,153	12,837	14,393	16,048	10,391	...
1,863	3,751	3,610	3,448	3,531	2,970	1,802	...
176,261	162,109	64,325	97,742	179,321	221,619	102,967	...
54,397	41,174	89,982	53,709	38,870	43,789	97,916	...
30,180	30,041	27,148	24,691	20,802	15,966	1,462	...
2,155	1,786	1,904	2,153	2,120	2,597	3,407	...
636	197	178	737	617	698	695	...
121	318	161	109	106	236	95	...
114,000	129,000	146,000	70,794	61,777	59,112	40,785	...
73,000	79,000	90,000	49,751	44,186	46,561	43,405	...
178,000	141,000	92,000	79,173	88,054	220,985	125,079	...
137,000	119,000	81,000	49,001	64,887	82,461	64,339	...
38,449	49,893	58,187	64,581	65,310	46,534	11,770	9,661
4,101	6,017	6,799	6,159	6,571	7,625	7,223	5,867
42,769	117,616	89,427	122,049	178,132	171,853	64,235	11,766
17,131	49,171	73,014	112,921	97,932	93,459	80,455	32,113
140,594	166,601	153,505	136,834	143,686	92,158	34,310	26,988
56,335	51,063	55,715	59,105	56,217	66,203	71,382	75,595
490	786	832	1,202	1,524	1,417	1,211	...
4,789	5,230	7,020	9 012	11,052	11,979	12,973	...
7,379	12,063	14,787	15,192	12,748	8,833	2,781	...
2,601	2,795	2 839	2,800	2,363	2,973	2,997	...
28,697	26,480	23,272	28,845	35,063	39,972	26,434	...
2,363	1,765	3,959	2,640	2,263	1,769	3,253	...
46	26	46	269	474	394	...	...

2) From 1928 onwards the figures are not comparable with those for earlier years.

3) Up to 1922 including Ireland, from 1923 onwards Northern Ireland only.

4) Nationals and aliens.

Czechoslovakians migrated. Finally emigration in the proper sense came into play once more. Interstate migration was, however, affected by the changed conditions even more than internal migration. Freedom of migration may be said to have disappeared in post-war times. Scarcely had a new order of things emerged from the confusion of the war and post-war times, and scarcely had the conditions arisen making possible a revival of emigration, than the United States announced an important limitation of immigration. Gradually in the course of years the remaining immigration countries followed suit and there came about a fundamental change in the conditions under which formerly all world labour markets were open to all seeking work. At the present time the interstate migration movement is compressed within exceedingly narrow limits. Not only so, but it has in a measure become reversed; countries which were previously immigration countries now show losses by migration, and in the former emigration countries the return movement exceeds the outward movement.

In view of the many lacunae and other defects which are still always found in emigration statistics, the statement appended here is confined to the immigration and emigration affecting the most important overseas countries and the principal European countries of emigration respectively. These returns illustrate with sufficient clearness the course of the development during the post-war years with its manifold contradictions. Even a cursory examination of the immigration figures included in the first table will reveal the change that has taken place. Of an immigration which in the last pre-war years amounted to over two million persons there is left in the recent years no more than a movement of a few hundred thousands.

#### CAUSES OF THE PRESENT POSITION OF THE MIGRATION MOVEMENT.

It is undoubtedly possible to indicate many causes which account in common for the present position of internal migration and for that of interstate migration. But justice is scarcely done to the actual conditions if in both cases the position is ascribed exclusively to the economic crisis.

The *arrest of the internal migration* is in the first place a consequence of the economic crisis. The unemployment in towns and industrial centres continues to render it more difficult to make a living in the towns and the prospect of an improvement of living conditions through migration becomes more illusory. In certain countries the situation of the labour market in the towns contributed to render difficult migration from the rural districts, the relief agencies for the unemployed in some cases pronouncing against it. In this way probably many a one has been deterred from migration and forced to content himself with the little he has on the land. Too great an importance, however, should not be attached to these measures, especially as ultimately it is a question of the consequences of the crisis, which must disappear with the crisis itself.

A question which is difficult to answer is how far the present trend of internal migration, especially the "flight from town" in its true sense, is to be attributed to moral and psychological causes. There is talk of weariness of the great town

and recoil from its conditions. The large town however has in the first place lost its power of attraction, because the belief is gone in the renewal of those earlier times when the large town offered work and food to all. It seems to those who desire to go back to the land beyond belief that the great mass of the unemployed could ever one day return to take their former places in industry, trade and commerce. Again for those who came in recent years only to the town the return to the land presents no difficulty if they are still unmarried and have relatives in the country.

If it is possible to speak of a "weariness" of the great towns, this would occur primarily among the younger people. Undoubtedly it is among them that the strongest reaction against the large town and a desire for natural conditions and closer contact with the land are noticeable. They rebel not unfrequently against the monstrous mechanisation of industrial work and the general conditions of life in the great towns, and they are ready and willing to take up the formerly despised rural and agricultural work. In many cases there also entered the idea that it would be easy to find employment on the land. When, however, this opinion proved to be mistaken, the migration from the town in all countries fell much below anticipations.

The transformation in the trend of internal migration was especially noticeable in the countries, such as Germany and the United States; in which there had been previously a rapid process of industrialisation. There is now a widespread opinion that this phenomenon is a reaction against the earlier too hastily achieved industrialisation and over-industrialisation, whereby the balance in the distribution of population between town and country, between the agricultural and the non-agricultural callings, was disturbed and with it the whole economic balance was upset.

*The causes of the position of the interstate migration* are at the present time also primarily of the economic order. The general crisis has completely crippled the absorption capacity of the immigration countries. The first limitations of immigration, however, appeared long before the onset of the crisis.

This is true of the United States in the first place. When this country by a series of immigration laws reduced immigration to a low percentage of the pre-war immigration, non-economic motives played the larger part. Among the economic factors were the reduced extent of the tracts of still unoccupied land and the difference existing between the wages in the United States and those paid in the emigration countries in question. Reasons of national and social policy had even more weight. The crisis was of course a contributory factor to the latest developments in this respect.

The limitation of immigration by the United States could not be compensated by an increase in immigration into other countries for the simple reason that the immigration into the United States had been larger than that into all the other large immigration countries taken together. The reasons which led to the restriction of immigration by other countries were partly economic, partly political. The attitude of organised labour to immigration has played a considerable part in this restrictive policy.

## THE EFFECTS OF THE PRESENT POSITION OF THE MIGRATION MOVEMENT.

The first visible consequence of the interruption of the migration movement is the increase of the proportion of the rural population. Everywhere it was the rural and in particular the agricultural population which accounted for the main part of the increase in population. At the present time, there is not sufficient nor indeed any outlet for this surplus, neither to the towns nor, in the case of the countries that were formerly emigration countries, abroad.

On the land itself only a small part of the increase of population could be accommodated. Openings for employment in agriculture were soon exhausted. The present state of affairs illustrates as nothing else could show narrow are the limits of the population capacity of agriculture in given conditions. On the family farms the wage-earning labour was replaced to an increasing extent by members of the family, and unemployment spread rapidly in the country. Owing to its special character it is difficult to obtain a statistical estimate; in particular the "latent" unemployment on the family farms is not measurable. In consequence of the oversupply of labour the wages of farm labour in some localities fell far below the pre-war rate. Most serious of all is the overpopulation on the areas of small farm holdings.

In these circumstances it is easily intelligible that redirection of the urban unemployed on to the land is fraught with difficulties. In many countries, alike agricultural or industrial, attempts are being made both by private and by public enterprise, but proposals and measures to which effect is actually given alike seem for the most part to have the character of emergency measures. They do not imply a real removal of difficulties since they offer to the returned migrants no new possibilities of existence. Agricultural settlement would be a real solution, but practicable only to a very limited extent in European countries. Provision of the necessary funds would be quite feasible, and settlement on primitive lines might follow. Land available for such a purpose is however limited in area. Undoubtedly settlement is a valuable aid to the reduction of unemployment, and on that account it has everywhere attained importance, but it can provide only for a small fraction of the unemployed of the towns, and will have to be on the whole confined to the provision of accommodation, and that partial only, for the rural surplus population.

In recognition of this fact, in countries where industrial unemployment has attained very great dimensions, another movement has assumed importance, *viz.*, suburban settlement. The measures in Germany call for special mention. In its present form, suburban settlement belongs for the most part to the sphere of housing policy. Primarily it provides unemployed persons and short time workers with cheap houses. The plots assigned should not accordingly be so large as to have any prejudicial effect on the commercial utilisation of land, in particular on commercial fruit and vegetable growing. Suburban settlement will not thus create the means for earning an independent livelihood. The cheap dwelling and the opportunity of growing some part of the food requisites mean

a real economic relief for the unemployed. Hence suburban settlement is regarded by many, and not without reason, as merely an emergency measure to be carried through with the minimum of funds, and in such a way that later on a reinstatement of workers in the production process may follow with a minimum of loss. Hopes are thus entertained of a revival of the economic situation with re-inclusion of those now unemployed. Along with suburban settlement the allotment garden movement has been revived. A more rapid success may attend this assignment of small uncultivated plots and less expense may be involved, but even less than suburban settlement does it involve a satisfactory solution.

The oversupply of agricultural labour and the abrupt fall of wages has in some agricultural areas brought human labour once more into competition with mechanical aids to farming. Any further mechanisation will proceed within narrower limits. The sale of farm machines has quite noticeably decreased in all countries. It is readily intelligible that on a number of farms machines and implements remain unrepaired as it is considered cheaper to utilise human labour instead. The view of those who speak of a return to a primitive, or less mechanised economy, is accordingly by no means unjustified.

The return to the land, or quite generally, the diminution of the urban proportion of the population, involves a contraction of the market for agricultural products. Where, as in the United States of America, the numbers of the urban and industrial workers who returned to the land run into millions, the marketing possibilities for agricultural products have obviously been reduced. The market situation for these products must become even more unfavourable if the returned migrants do not confine themselves to the production of food for their own requirements, but also proceed themselves to supplying the market, a development which in the long run is almost inevitable. There is a parallel in the suburban settlement in Germany. Up to the present the extent of this has been negligible as compared with the unemployment. The production from the small suburban settlements and from the allotment gardens can have in the first instance no effect on the marketing of agricultural or garden produce, since for the most part this production serves merely to meet the requirements not previously satisfied owing to want of purchasing power. If this form of settlement widens its scope, as it inevitably will if the crisis continues, it cannot fail to have a strong influence on the marketing situation for agricultural and garden products. Every extension, however, of the suburban settlement will thereby simultaneously involve a step forward in the endeavour for autarchy, and must contribute to a further limitation of the importation of food supplies. The same considerations apply to suburban settlement taken as a preliminary for the transition to short time work. If the wage reductions necessarily involved in short time work are to be made tolerable to the workers, they must have the opportunity of producing some part of their food requirements themselves. Undoubtedly it is a matter of congratulation if by this means numbers of the unemployed regain occupation and a purpose in life, and with that a healthful occupation for their leisure. The produce of a small holding may however seem to be poor compensation for the former remuneration of work. In the establishment of suburban or other form of small settlement the present

situation on the European areas of small holdings should be kept more closely in view, and thereby many unsuitable measures would undoubtedly be avoided.

The course taken by the situation in general will also have a disturbing effect on the volume of marketing of industrial products. The migrants from the town and those who have never left the land will only rarely have the same purchasing power as formerly, and their standard of life must fall. Even though the contraction of the purchasing power is not everywhere so marked as in the Eastern European countries and other European agricultural regions, it will none the less have important effect on the trade in industrial products whether on the national markets or still more on the world market.

The present migration trend will in the long run lead to a severe pressure on present rural conditions of ownership, and once more it is the densely populated areas of small holdings where this pressure will be at its worst leading finally to further sub-division of land with all its attendant evils.

Quite generally it must be noted that the arrest of the migration movement in all countries has led to an intensification of those branches of economic activity which by utilisation of the marketing facilities still available on the home market can increase their degree of employment or can offer the opportunity for a more or less independent existence. At the same time foreign competition is kept down by tariffs and a number of other measures. In industrial countries with an extensive importation of food requirements the return to the land or the impossibility of migration to the town has necessarily led to increased development of agriculture. Since agriculture is now the only branch of economic activity which still offers possibilities of extension and of marketing, it has been encouraged and protected in every possible way. Hence the phrase "ruralisation" (*Reagrarisierung*), has become a good description of the present development of the industrial countries. To a certain extent the restoration of a fresh relation between agricultural and non-agricultural production, rural and urban population may have the effect of bringing about a relief and involving desirable consequences. On the whole the limits are already traced for these countries, unless the ultimate result is to be a drop in the standard of living.

The conditions in the agricultural countries present more difficulties. The natural consequences for them would be a further development of industry. The difficulties in the way of industrialisation are at present invincible. Even if the financing could be arranged, there would be no market available, since the world market is already overglutted with industrial products and the purchasing power of the poverty-stricken farm population is insufficient.

Apart from further consideration of details it is sufficiently clear that without the restriction of the interstate emigration the acute stage of the economic difficulties would not have been reached. In fact the view that the restriction of emigration is one of the main causes of the crisis admits of proof on valid grounds. So violent a transformation on the home market would have come about in very few lands, if the countries had not been forced constantly to find new and in part only unremunerative openings for their population. On the contrary in the pre-war time the migration movement formed one of the strongest forces affecting exchange of money and commodities. Freedom of



migration in connection with the free exchange of money and commodities always led to an equalisation and equilibrium between the industrial and agricultural lands, the immigration and emigration countries and stimulated the economic activity of all countries. To-day instead are seen on, the one hand, lands with the menace of over population and, on the other, lands which are able only partially to utilise their economic possibilities.

More than once the phrase "opening of new markets" has been employed at international Conferences. So long as the implied demand for the creation of new emigration facilities is not taken into serious consideration, all efforts at restoration of an unfettered international exchange of money and commodities can be of little effect.

#### CANADA.

While it does not appear that any pronounced back-to-the-land movement has taken place spontaneously in Canada, much has been done by the Dominion Government and by the Provincial Governments to settle unemployed persons on the land. Several provinces have also taken steps to provide garden allotments for unemployed workers.

A scheme for the settlement of unemployed persons on the land was proposed in 1930 by the Hon. Wesley A. Gordon, Dominion Minister of Immigration and Colonization and adopted after discussion with the premiers of the different provinces, who unanimously approved of the proposal. Mr. Gordon's programme, which took the place of the former programme of inviting immigration from other countries, was to settle on farms families in Canadian cities who had originally come from the country and were either unemployed or in danger of unemployment, and also to place in farm labour unemployed single men. The scheme was carried out with the collaboration of the Colonization Departments of the Canadian National Railways and the Canadian Pacific Railway.

No financial assistance was offered, so that the families to be settled on the land required to have at least enough money to establish themselves on the land. As, however, prices of farms were low and many could be bought on conditions not involving any immediate payment and as prices of stock and used equipment were also low, a few hundred dollars usually was sufficient.

Up to 30 September 1932, the three interests concerned were instrumental in placing on the land 9,493 families and in finding farm employment for 20,689 single men. On the basis of five persons to a family this is equivalent to the settlement on the land of 68,154 persons. These figures do not include the persons settled on the land under similar schemes by the provincial governments.

It was found however that there were many families willing to return to the land but not in possession of sufficient capital to do so under Mr. Gordon's scheme. In May 1932 the Dominion Government therefore decided to extend the scheme by offering to bear a portion of the cost of settlement on the land of selected families, provided the province and municipality concerned were prepared to make a similar contribution.

The agreement offered to each of the provincial governments, and accepted by all except one, was to the effect that the Dominion Government would contribute one third of an amount not to exceed \$600 per family for the purpose of placing on the land families who would otherwise be in receipt of direct relief, the remaining two thirds of the expenditure to be contributed by the province and municipality concerned as might be decided between them. The Dominion Government contribution was to be regarded as a non-recoverable expenditure. The total expenditure on behalf of any one family during the first year was not to exceed \$500 for all purposes inclusive of subsistence and establishment, at least \$100 being withheld to provide subsistence during the second year.

In the agreements with the different provinces the number of families to be settled on the land in 1933 was specified.

The total number of families was 6,926 and the total expenditure for which provision was made was \$ 4,157,025, the Dominion's proportion being \$ 1,385,675.

Full particulars of the special settlement schemes of the provincial governments are not available, but it may be noted that in the Province of Quebec 3,678 families and 985 single men were settled on the land in 1932 under the provisions of the Act to Promote the Return to the Land passed by the provincial legislature in that year. Of these 329 families and 208 single men returned from the United States to take up land in the province. In Nova Scotia a scheme has been set on foot for the settlement on the land of unemployed coal miners who have had experience in farming. The carrying out of the scheme is entrusted to a Board of five persons appointed by the Lieutenant-Governor in Council under the terms of a special Act of the provincial legislature.

As showing that there is a spontaneous demand for land for settlement, in spite of the low prices of agricultural products, it is interesting to note that since the Peace River Block in north-eastern British Columbia was thrown open to settlement in August 1930, 300,000 acres have been taken up by 2,500 families.

The provision of garden allotments is perhaps most actively carried on in the Province of Ontario. Reports furnished by representatives of the provincial Department of Labour in 24 municipalities showed that in 21 of those municipalities schemes were in operation under which between 7,500 and 8,500 men were cultivating garden plots. Some civic authorities insist that unemployed men receiving direct relief should, if possible, cultivate such plots. The assistance given varies from merely providing the land to completely planting the garden before handing it over to be cared for and cultivated.

In Manitoba urban municipalities allot vacant city lots to citizens who are unemployed and who will undertake the gardening of them. It has been made a condition that every married man in receipt of unemployment relief must cultivate a garden. Seeds are supplied gratuitously.

In Alberta the various cities have made land for gardening available to unemployed persons in receipt of relief; in Calgary and Edmonton in 1932 about 2,000 unemployed persons were cultivating vacant lots, while the same two cities were directly cultivating large plots of land, and having the work done

by men in receipt of relief; the vegetables grown on these plots were used during the winter for relief purposes.

In Saskatchewan, also, the municipal governments encourage workers to undertake gardening; in some instances they plough and harrow the land before handing it over to the worker and also supply seeds.

In the other provinces private organisations have provided allotments, but no official schemes appear to be in operation.

### GERMANY.

The immense advance in industrial activity, which was accomplished in Germany during the decades that preceded the war, was accompanied by an increasing urbanisation and concentration of the population in defined industrial areas. During the war this movement was temporarily interrupted, but shortly after the end of the inflation it recommenced. The proportion of the urban population (*i. e.*, the population of communes with 2,000 and over inhabitants) to the total population increased from a full third in 1870 to nearly two thirds in 1925. Almost the entire natural increase in the population was absorbed by the towns and larger communes, so that the absolute height of the rural population remained unaltered. The larger the commune, the higher, generally speaking, was the rate of increase. The increase in population for the fifty years 1875 to 1925, an increase of 25.3 million, was distributed as follows among the size classes of communes (1).

Communes with under 2,000 inhabitants . . . . .	219,607 or 0.9 %
»        »        2,000 up to less than 5,000 inhabitants.	1,967,534 » 7.8 %
»        »        5,000        »        20,000        »	3,588,973 » 14.2 %
»        »        20,000        »        100,000        »	5,482,499 » 21.7 %
»        »        100,000 and over        »	14,045,395 » 55.4 %
	<hr/>
	25,304,000 or 100 %
	<hr/>

The effect of the development of industrial activity was not only the absorption of the natural increase of the population, but also the transformation of Germany from an emigration into an immigration country.

The losses by emigration were in Germany as follows for the periods indicated :

1871-1880 . . . . .	694,000 persons
1881-1890 . . . . .	1,319,000        »
1891-1900 . . . . .	364,000        »
1901-1910 . . . . .	5,000        »

(1) Statistik des Deutschen Reiches, Band 401, Berlin 1930, S. 521.

Foreign labour, and especially seasonal labour, was employed to a constantly increasing extent in Germany since the beginning of the century. In 1910 the number of such persons was over one million.

Although there was no diminution in the rural population in respect of Germany as a whole, decreases occurred in many small administrative areas, and in purely agricultural districts the losses by migration were quite considerable. These losses reached a maximum in the agricultural province of East Prussia. In 1910 the number of inhabitants of this province approximately was 2,150,000 with a population density of 58.05 the square kilometre, but in the period from 1870 to 1910 the loss through migration was about 700,000, or 17,500 yearly. In the period from 1900 to 1910 this loss amounted to 193,500 persons. The next largest losses for the same cause during the period 1900 to 1910 were those of the province of Posen, 188,000, and West Prussia, 152,000.

The movement from country to town was naturally accompanied by a continuous decline in the ratio of the rural to the total population. Whereas during the period 1882 to 1925 the number of persons engaged in farming still showed some slight increase, there was a decline in the number of those definitely following the calling of agriculture, taking together those actively engaged in farming as their main occupation and members of their families not following independent occupations. The ratio of this group to the total population, calculated on the basis of the present territorial area of Germany fell from 40 per cent. in 1882 to 33.6 per cent. in 1895, to 27.1 per cent. in 1907, and to 23.0 per cent. in 1925.

The exodus from the land was almost completely interrupted by the war. During the first post-war years and during the inflation period there was even from time to time a not inconsiderable return movement to the country. As soon, however, as the inflation came to an end and the work of economic reconstruction had begun, that is to say from 1924 onwards, the movement from the country to the town and from agricultural to the non-agricultural occupations assumed larger proportions. The extent of the movement for the years after the inflation may best be traced from the side of the increase in the population of the towns and more especially the large towns. On the basis of the notifications to the authorities of arrivals and departures there was shown to be, taking the large towns of Germany together and over the period 1924 to 1929, a gain by migration of 790,000 persons in all. The largest such gain was that of Berlin with about 450,000 persons. During that period several large towns, especially those of the industrial districts of West Germany undoubtedly experienced losses by migration, but these were not particularly large and were for the most part the consequences of local population shifts.

A general re-orientation of the migration movement first appeared in 1930. Of the fifty largest towns of Germany in 1930 only 16 showed gains by migration and those diminished, while all large towns taken together lost by migration 60,000 persons or 2.9 per thousand of their population. The 47 towns with from 50,000 to 100,000 inhabitants showed a total loss by migration in the same time amounting to 1.9 per thousand.

In 1931 the losses by migration of the towns were larger. Out of the 50 largest towns only 11 had a gain from migration of 7,000 persons in all, while the

remaining 39, lost 109,000 persons in this way, so that the large towns taken together lost by migration 102,000 persons or 5.2 per 1000 of their population.

In the group of the 47 towns with 50,000 to 100,000 inhabitants, 25 towns had losses from migrations, the towns of this group as a whole losing approximately 6,000 persons or 2.3 per thousand of their aggregate population by migration.

The year 1932 brought a decline in the losses by migration. Of the 50 large towns only 35 showed losses by migration, while the total loss by migration of these towns amounted to 78,786 persons or 4 per thousand of their population. The towns from 20,000 to 100,000 inhabitants even showed in that year a gain from migration of 10,000 persons. Losses from migration considerably higher in 1932 than in 1931 appear only for Berlin and Hamburg. A decline in the losses from migration was especially noticeable in the industrial towns of Western Germany, some of which had already shown such losses for six or more years. The following table gives information as to the progress of the losses through migration in the two towns mentioned and in some of the industrial towns of Western Germany:

	Population on 31 Dec. 1931 in 1000	Loss by migration (—) Gain by migration (+) per thousand of population			
		1928-29	1930	1931	1932
Berlin . . . . .	4,288	+ 17.1	— 2.0	— 7.7	— 11.6
Hamburg . . . . .	1,137	+ 11.5	— 1.3	— 9.3	— 12.0
Dortmund . . . . .	533	— 3.2	— 12.6	— 8.3	— 5.7
Düsseldorf . . . . .	473	— 2.8	— 10.4	— 10.3	— 1.6
Duisburg-Hamborn . . . . .	441	— 2.1	— 12.2	— 13.9	— 7.5
Gelsenkirchen . . . . .	335	— 15.6	— 20.3	— 16.0	— 7.2
Bochum . . . . .	320	— 13.0	— 10.8	— 14.3	— 4.1
Oberhausen . . . . .	194	— 4.7	— 12.5	— 6.9	— 5.2
Largest 50 large towns taken together . . . . .	19,598	+ 6.6	— 2.9	— 5.1	— 4.0
47 towns from 50 to 100,000 inhabitants . . . . .	3,495	+ 2.4	— 1.9	— 2.3	+ 1.7

The decline in the losses from migration of the large towns in 1932 in no way, however, indicates that the so-called flight from the town is already reaching an end and that a further change of direction of migration has set in. The much more significant fact in relation to the migration movement of the year 1932 is that the figure of the removals from the towns declined in that year more sharply than the figure of the accessions. The following table shows the course of the movements for the 50 large towns:

	Entered	Left	Loss (—) or gain (+)
1929 . . . . .	1,767,000	1,672,000	+ 95,000
1930 . . . . .	1,613,000	1,670,000	— 57,000
1931 . . . . .	1,368,000	1,470,000	— 102,000
1932 . . . . .	1,245,481	1,324,267	— 79,000

A general retardation of the migration movement is accordingly to be observed. The prospects of effecting an improvement in the conditions of existence by means of migration have become increasingly slender. In addition various measures for the relief of the urban unemployed, such as suburban settlement and promotion of allotment gardens, have resulted in a shrinkage of the migration from the town. The tendency of the movement remains however the same. The flight from the towns would assume immense proportions if a plot of land were to be had in the country without further ceremony or if funds were no longer available for keeping the allowances made to the urban unemployed up to the present level.

It is hard to say whether the motives impelling human beings to leave the towns are more economic or more psychological. Undoubtedly there is a strong interaction of motive, but possibly apart from the economic pressure of the present crisis the large towns would not have lost their attractive power. It is readily intelligible that with the steady increase in unemployment the workless in the towns have gradually lost all hope of reinstatement in the processes of industry, and instead begin to direct their thoughts towards the land, with the idea of finding a fresh object in life through the cultivation of however small a plot of ground, and of securing some part of the necessities of life by their own labour. The hope is cherished that on the land there is always some kind of opening for work to be found, and that the absolute essentials are easier to come by than in the town. The unemployment figures according to the Employment Bureaus amounted to the following totals in average for each year :

1928 . . . . .	1,391,000 persons
1929 . . . . .	1,898,600    »
1930 . . . . .	3,075,600    »
1931 . . . . .	4,519,700    »
1932 . . . . .	5,602,700    »

The decline in the number of persons returning to the country in spite of the undoubtedly widespread discontent in the large towns is proof of the difficulties involved in a return to the land. It is still comparatively easy for the younger people to find some kind of employment on the land, especially if they are country-bred and unmarried. It may be safely assumed that the majority of those who have returned consist of young unmarried persons, who during the previous years came the town from the country and now in consequence of unemployment are once more returning to their relatives.

Possibilities for the return of other groups might be found in the first place in agricultural settlement. In the *International Review of Agriculture* for September 1932 a brief survey was given of the present situation of rural land settlement in Germany, so that it is unnecessary to give any detailed account here. Conditions prevailing at the present time are in many respects favourable to land settlement. The land required can be obtained on the open market at low prices and there is no need to have recourse to expropriation. There is a superabund-

ance of suitable settlers, who are ready to face privations in order to make sure of a living however modest, so that no large funds are required for financing the settlement.

If for these reasons unduly high hopes have not seldom been placed on land settlement as a means of combatting unemployment, it is because it is too often forgotten that the possibilities of settlement are limited and that only a comparatively small number of persons can be so placed. In the last few years some 9,000 new holdings have been formed yearly. The number of the urban unemployed who are accommodated within the limits of rural settlement will always remain very small, since the preponderant element among the settlers will be drawn as before from the groups of the younger sons of farmers and farm workers and from other sections of the rural population.

As soon as the workless man in the town was forced to recognise that the return to the land was not so simple a matter and that for the most part that there was no course open other than to remain in the town, he made it his endeavour at least to obtain a small piece of land on the borders of the town so as to secure by its cultivation some occupation and some part of the necessary food supplies. The longing for life on the land and in natural surroundings was awakened.

The movement towards the town borders gradually increased so that the Government found itself obliged to intervene with a view to encouragement and regulation. By an Emergency Order of 6 October 1931 a special *Reichskommissar* was appointed with fairly extensive powers for the establishment of small suburban settlements and the provision of allotment gardens. At present suburban settlement and the provision of allotments is the province of the Ministry of Labour. According to the directives laid down by the Ministry the carrying out of suburban settlement lies in the hands of the Provinces, the communes and unions of communes, from which bodies however it may be transferred to housing and settlement undertakings of public utility.

Amortisable loans at a low rate of interest are granted by the *Reich* on application, if the size, nature of the soil and equipment of the settlement is such as really to make easy the provision of a subsistence for the settler's family. The individual blocks should not as a rule be under 600 square metres, nor over 5,000. The settlers and their families must be persons suited to the work of farming. Unemployed persons and workers on short time are eligible as settlers, if they have taken part in the preparation of the tract of land for settlement; special consideration is to be given to large families. Land required may if necessary be leased to settlers from the property of local corporate bodies or assigned in ownership with long term amortisation of the purchase price.

As the small plots cannot in themselves supply subsistence, care is to be taken that the plots are so situated that the settlers can follow their own main occupation or can resume it on any improvement in the economic situation. Suburban settlement is to receive more special encouragement in the medium-sized or small towns, so as to bring about at the same time the desired thinning of the population of the large towns and industrial centres. The buildings must

be carried out in the simplest form and with the simplest fittings and so arranged as to facilitate collaboration between the settlers.

Cash expenses for the erection of houses and equipment of the single plots must not exceed 3,000 marks exclusive of the purchase price of the land. The *Reich* grants a loan per plot up to the maximum of 3,000 marks. Apart from suburban settlement the formation of allotment gardens for the unemployed is also encouraged by the *Reich* by means of loans up to 70 marks per garden. The required plots are in the same way provided in the first place out of the property of public bodies. Up to the beginning of 1933 approximately 25,000 small settlers' holdings and 78,000 allotment gardens were established for unemployed persons by means of *Reich* subsidies. At the beginning of February 1933 additional funds amounting to 50 million marks were allocated for the promotion of small settlements and the layout of allotment gardens.

Much has been said of the importance and of the advantages and disadvantages of the suburban settlements. Suburban settlement is generally welcomed because it affords relief from the moral as well as the economic depression for the workless and their families. Capacities that would otherwise lie idle are utilised in the work of building of a dwelling and in the cultivation of a small plot, with the result that eventually there is less charge on the public relief funds. The workless man regains his hope for a better future and his resistance to trade fluctuations is strengthened. Another argument in favour of suburban settlement is advanced by those who see in it the possibility of arriving at a general shortening of the working day since the corresponding reduction of wages is made possible if the worker has already a house of his own and garden produce available. The relieving of the congestion of the large towns and the linking of the town worker with the soil are among the advantages to be welcomed in this type of settlement.

On the other hand in its present form there is too much of the emergency measure about the suburban settlement. A family cannot live independently on the small plots of land which are assigned. It is not proposed to assign larger plots, as only very limited areas are available in the suburbs, especially taking into consideration the large numbers of the urban unemployed. Nor is it proposed to make settlements at greater distances from the towns, where transport and communication difficulties would prevent the short time worker from following his main occupation and would preclude the possibility of any future reinstatement of the workless in the industrial process.

The plot assigned is thus to serve merely for self supply and to meet food requirements before unsatisfied; production for the market is to be as far as possible checked, so as to avoid interference with the commercial growing of fruit and vegetables. These and similar provisions of the instructions published by the Minister of Labour (*Reichsarbeitsminister*) show clearly, that the encouragement of suburban settlement is prompted by the view that the national economy will sooner or later be in the position to reinstate those now unemployed within the industrial process. This is no longer the belief of the great number of those who wish to return to the land. To them it seems incredible that with all the extent of the mechanisation and rationalisation the same number of



human beings can again find occupation. Any judgment of the suburban settlement depends accordingly in great part on the view that each individual holds as to the future demand for labour and the planning of working time in industry and trade.

Still another point of view in of importance. Suburban settlement involves a retention of population in the town and the industrial centres, justified, it is argued, in view of future population developments. By the decline in the excess of births over deaths, it is conjectured, the growth of population of the large towns would be affected within measurable time in two ways. In the first place even now in the majority of the large or medium-sized towns the excess of births over deaths is either non-existent or very small. The proportions of living births to deaths is bound to become still more unfavourable, if in consequence of the present predominance of the higher age groups the number of births diminish and that of deaths increase from a definite point of time onwards. On the other hand, this more marked decline in the natural increase of population, and the resulting stationary condition or in many cases even decline in the town population, could not be compensated for, as usual, by the rural excess of births over deaths, since that too would have suffered diminution. Such a development of the population would, it is anticipated, relieve the situation of the town labour market. This view however does not remain unopposed, in fact there are cogent arguments brought against it. Moreover the trend of population development is not regarded as being completely uniform. It is for example conceivable that an improvement in the economic situation would lead to a higher birthrate; the present birthrate is undoubtedly conditioned by economic considerations.

State encouragement is also given to the movement towards the land by the industrial conscription, the carrying out of improvements and cultivation of waste lands. A further measure, the purpose of which was to bring the young people into closer contact with agriculture was the "Landhilfe" or land subsidy, instituted on 1 March 1933. The Labour Bureaus were thereby empowered up to 30 June 1934 to grant a premium to the owners of family farms of not more than 40 hectares in extent, provided that they take on labourers beyond the number employed in the previous year. The origin of the introduction of this premium was that on many family farms the number of wage-earning workers employed was much reduced owing to the pressure of the crisis, so that the members of the family and in particular the farm women were overburdened with work. The subsidy may amount to 25 marks for male workers, and to 20 marks for females. The registration of unemployed persons for "Landhilfe" is optional.

In the foregoing statement the recent tendency of migration is treated mainly from the point of view of the towns. This however by no means exhausts the question of the so-called flight from the town. Far more important than the migration from the towns — both in actual numbers and in consequences — is the interruption of and difficulty attendant on the migration from country to town. In contrast to earlier practice it is today the small towns and rural communes which absorb the natural increase of the population. This is also evident from

the growth of population of these towns. In the following groups of towns the population figures for 1932 may be shown thus :

		In 1000 inhabitants	
		1-1-1932	31-12-1932
Communes with over 100,000 inhabitants . . . . .		19,598.5	19,539.3
» » 50,000 to 100,000 inhabitants . . . .		3,495.3	3,516.0
» » 30,000 to 50,000 » . . . .		2,763.0	2,785.0
» » 15,000 to 10,000 » . . . .		3,429.0	3,453.0
		<u>29,285.8</u>	<u>29,293.3</u>

The population of the rural areas which has so long remained at a static point now begins to increase. Areas from which there was formerly emigration now become also areas of immigration. This statement holds for example for the province of East Prussia at an earlier date known as an area of emigration. In the case of East Prussia this development can be noted with precision, since a direct reckoning of the immigrations can be made from the official notifications of entering or leaving the province. The loss by emigration of East Prussia, which in the last decade before the war amounted to 19,000 to 20,000 persons yearly, and in 1929 had risen to 20,500, fell in 1930 to 4,119, and for 1931 there was noted on the contrary a gain by immigration of 3,900 persons. This phenomenon was mainly to be attributed to the return to the Province of workers dismissed from Berlin and the industrial region of the Rhine provinces and Westphalia. Whereas in East Prussia the pressure exercised on the labour market by the immigration could be counteracted by the new rural land settlement, this was not the case in other rural areas. In them the prospects of employment are quite as unfavourable as in the towns. In the areas of family farming the younger members of the family are crowded on the farms. The first consequence of this is the dismissal of wage-earning workers, intensifying the already existing unemployment. The areas of small holdings, which tend in normal times to be overpopulated, are especially affected by the present conditions.

However much the new trend of migration is still disputed, its effects are already noticeable on economic policy. The impulse to find room for more workers in agriculture has inevitably led to a stronger emphasis being placed on agriculture, with a thereby stronger support for the attempts to secure agricultural autarchy. "Reagrarisierung" (ruralisation) is no longer a mere catchword, and recent measures have as their object the definite and systematic broadening of the agricultural basis.

#### ITALY.

The new agricultural and demographic policy of Italy is based on two considerations of the first importance: that of rendering the country independent of foreign food supplies, and that of providing for the means of existence for a population of which the average annual increase amounts to 400,000 persons and

which has no longer, as formerly, an outlet in emigration. The "Wheat Campaign" or *Battaglia del Grano* opened in 1925, and carried on with results entirely satisfactory, is the solution of the first problem, while the second is met by the integral land reclamation or *bonifica integrale*, the regulation of which was enacted by the Law of 24 December 1928, No. 3134, and by succeeding measures, consolidated and completed by the Decree Royal of 13 February 1933, No. 215.

When the former policy of encouraging emigration by every means, direct and indirect, was abandoned in favour of the retention in the country of the mass of surplus workers, the problem presented itself of forming within Italy itself the possibilities of work and existence. This was the origin of the scheme of integral land reclamation, the purpose of which is to secure the greatest possible utilisation of the lands, by the prosecution of carefully co-ordinated plans for drainage and irrigation, road construction, aqueducts, rural buildings, settlers' dwellings, etc.

In any rapid survey of the movement of Italian emigration, certain different phases will be distinguished. For the period 1876 to 1900, emigration fluctuates round an annual average figure of 210,000 persons. Between 1901 and 1913, it increased very rapidly and reached an annual average of 627,000 emigrants. During the war, a decrease took place, for obvious reasons, and an annual average of 168,000 persons was maintained. Immediately after the armistice the increase in the demand for labour to repair the war damage brought about a sudden rise in the number of emigrants to 253,000 in 1919 and to 614,000 in 1920. The closing of a number of labour markets caused a shrinkage, reducing emigration in 1921 to 201,000 persons. In the following years up to 1924, there was again a rise in the figures, up to an average of 345,000 persons yearly. After 1924 the total immediately fell, and in 1931 was as low as 166,000, and in 1932 still lower, or 83,309 persons only.

Taking the average emigration for the period 1922-24 as 100, the index numbers for the following periods become : 74 for 1925-27 ; 56 for 1928-30 ; 48 for 1931, and 24 for 1932.

Now from a study of the systems for securing employment for surplus workers it has been recognised that if this object is to be attained it is not sufficient merely to promote intensive cultivation, but it is essential to supplement this by a balanced programme of land settlement. Such a programme has in fact been drawn up and special organisations have been established to carry it out.

It is evident that a very delicate and difficult task is involved, *viz.*, to establish centres not merely of economic but also of social life, with all the equipment and public services essential to the communities, churches, schools, roads and communications, sanitary aid, etc. Moreover an endeavour should be made to establish between human beings and the land ties which are not temporary but lasting, not material only but so to speak spiritual, since apart from such forging of bonds there is risk of non-fulfilment of the objects desired.

The Ministry of Agriculture was already concerned in the organisation, on the lines indicated, of the land settlement work in the Roman Campagna, and throughout the country work of this nature was being done by the National Institute of Service Men (*Opera Nazionale per i Combattenti*).

The need however was felt of a new organisation specially instituted for the purpose, the activity of which should be linked with that of the institutions already operating. This new organisation was formed in 1926 under the title of "Permanent Committee for Internal Migrations" and was subsequently transformed, as will be seen, into a "Commissariat for Internal Migrations and Home Colonisation." This latter represents a typical organisation appointed to regulate the transfer of the excess number of agricultural workers from one part of the country to another, thus relieving the pressure of population in certain districts and directing the masses towards other regions needing labour for their development; in other words the institution is a distributor of labour strength.

It is for example well known that in the Po Valley and especially, in the provinces of Rovigo and Ferrara, there is an excess of farm labourers who cannot find work and that accordingly the congestion of the labour market depresses the economic and social conditions of the whole group of workers in this zone. On the other hand in the Roman Campagna, in Sardinia and in the colonies a shortage of labour is noticeable and in consequence vast tracts of land cannot be brought under cultivation, although capable, given the right type of cultivation, of supporting a farm population, and of making at the same time an addition to the national income. Hence in 1926 the duty was assigned to the former Permanent Committee for Internal Migrations "of studying and proposing the measures required for directing the current of migration from the provinces of the Kingdom with an excess population to the less populous provinces of the South and of the Islands which are capable of agricultural and industrial production beyond the present rate." In 1928, this Committee from being an organ for enquiry only became an executive body. In 1931 (Law of 9 April, No. 358) it was transformed into the Commissariat for Internal Migrations and Home Colonisation in direct subordination to the Head of the Government and so continues to the present day.

From the first in the view of this body the conception of land settlement has been that of a problem important not merely from the economic and political point of view; but also and even more so from the social standpoint, inasmuch as the transfer of families from one zone to another and the formation of new centres serve, it may be remarked, not merely to relieve the pressure of population in certain provinces and to bring other areas under remunerative cultivation, but nearly always, also to build up new activities and to stimulate those latent whether in the new arrivals or in the local populations.

Special attention is consequently attached to the selection of families to be transferred into the zones to be populated. Such families must positively possess the qualities of health and technical equipment such as will enable them to meet in full the requirements. For this purpose the Commissariat has instituted an index, which is kept up to date, of the families in each province who are prepared to emigrate, such showing the composition of each family, their abilities, their moral and political qualities, etc. Each time moreover that a removal is to be made, all the particulars are directly verified by a medical inspector and an agricultural expert, with the object of making a careful selection of settlers.

The most recent and most striking example is that of the 500 families transferred, on the initiative of the Commissariat, from the Venetian provinces into the new commune of Littoria. This transfer was made as the result of an examination on the spot of 1820 families as well as the inspection in full detail of all the members of 704 families. Each family placed becomes the object of incessant care. An index card is kept showing in addition to the civil status of all members, their work aptitudes, their past and present occupations, also the changes taking place in the family group after the arrival in the new locality, births, deaths, marriages, so that in this way there is always available full material for observation and enquiry.

The most interesting transfers from the demographic and home colonisation standpoints, and those for which complex problems of organisation of work and assistance arise, are the transfers of families definitely quitting their original domicile to establish themselves in other region or colonies. The Commissariat however also deals with temporary migrations from one province to another for reasons of work.

The total number of persons who have migrated from one commune to another in Italy in 1931 was 313,068. Out of these, 247,153, or 78.9 per cent., migrated for purposes of agricultural work, and 65,915, or 21.1 per cent, for so-called industrial occupation. Of the removals occasioned by agricultural work, 78.2 per cent. were for the weeding and gathering of rice and for the harvesting and threshing of wheat. The greater number of the migrations for so-called industrial work have been occasioned by the land reclamation operations and by road construction.

Grouped by the sexes, the number of the migrants included 229,241 men and 83,827 women.

The regions of largest migration have been those of the Adriatic seaboard and especially Venetia, Emilia, the Abruzzi, Molise and Apulia; those of greatest immigration, Piedmont, Lombardy, Latium and Lucania.

In 1931 there was a development more marked as compared with that of 1930 in regard to the type of migration of labour which most excites the public interest, that is to say the permanent migration closely connected with the schemes of integral land reclamation and home colonisation so energetically carried on at present in Italy. In this case it is no longer a matter of individuals migrating but of families, usually large families. Out of the 841 families, with 5650 members, including 3575 fit for work, who migrated in 1931, there were 182 who definitely made the removal for purposes of home colonisation. The majority of the migrants came from Venetia and it was Latium which absorbed the greater number of all immigrants.

In the period between 28 October 1931 and 28 October 1932 the Commissariat undertook the transfer of 53,280 agricultural workers as compared with 34,456 in the corresponding earlier period; provision was made for the definite establishment on the land, still within the period indicated, of 516 families with 4,644 members. To this last figure there must be added the 500 families of Littoria, the new rural commune which, after three months of existence, had a population of 7500 inhabitants.

Another striking example is that Mussolinia, in Sardinia, a village established and equipped, in accordance with moderna ideas, in the middle of this island and already in full swing of agricultural work.

At the present time, however, the most intense efforts of the Commissariat are directed toward the bringing under cultivation and peopling of the colonies of Tripolitania and Cirenaica, which are a natural outlet for the families of land workers.

For the purposes of land settlement in Cirenaica there has lately been set up (Decree-Law of 11 June 1932, No. 696) under the supervision of the Commissariat referred to and that of the Ministry of the Colonies, a special institution, the object of which is to "bring under cultivation by land settlement carried out by families from Italy the lands in Cirenaica which shall be assigned by the State as the property of the Colony." Before the end of October 1933, 150 families will leave Italy for this colony, under the care of this new institution. The Government of the colony will undertake the gradual execution of all the works within its competence, schools, churches, hospitals, etc., so that the civil organisation may keep pace with the development of the demographic settlement.

#### POLAND.

On 9 December 1931 the population of Poland was 32.1 million persons on a total area of 388,400 kilometres. According to the 1921 census, the distribution of the population by occupations was the following:

Agriculture, forestry, fishing . . . . .	72.3 %
Industry . . . . .	10.3 %
Trade and insurance business . . . . .	3.7 %
Transport . . . . .	1.8 %
Other occupations . . . . .	11.9 %

According to the occupational grouping of the population, the proportion of town dwellers in the total population was very small and only slightly increased during the period from 1921 to 1931. In 1921 the population of the 636 towns of Poland was 25 per cent. and in 1931 it was 27 per cent. of the total population. Of these 636 towns 308 had under 5,000 inhabitants and 177 only 5,000 to 10,000 inhabitants.

In view of the markedly agrarian character of Poland, the present average density of about 85 per square kilometre is undoubtedly to be described as high. But this average density is exceeded not merely in the industrial districts, but also in the purely agricultural areas of the south and south-east. Over wide districts the agricultural population amounts to 100 and more the square kilometre, a figure which, given the same direction and the same intensity of the agricultural production, could scarcely be reached in other European countries. The significance of this figure is best seen from a comparison with

a country such as Denmark, which has often been quoted as a model example of intensity and progressive development of agriculture. In Denmark the density of the agricultural population per square kilometre of land under cultivation is 34 only.

This density of population in the rural areas of Poland is not a recent phenomenon, and even in pre-war times it was a source of serious anxiety. Further increase in the agricultural, or in any case in the rural, population was the natural result of a sub-division of property carried to irrational lengths on the occasion of succession, and of the want of other openings for employment or occupation. At that time, however, the inhabitants of these densely populated regions could find relief in emigration. From the parts of Poland which in that period belonged to Prussia there was a large emigration to the German industrial areas, while there was a similar migration from Galicia to the Austrian industrial areas, and from Russian Poland to Russia. Very great importance in pre-war times attached to the seasonal migration of agricultural labour from Congress Poland and Galicia into Germany and into the other parts of Austria-Hungary. Among the foreign seasonal labourers employed before the war in Germany there were thus over 350,000 Poles from Russian Poland and from Austria and from 80 to 90 thousand Ruthenians. Since about 1890 the emigration into overseas countries, notably the United States, had considerably increased. It is naturally extremely difficult to arrive at a precise estimate of the overseas emigration during that period from the regions now constituting Poland, but some idea of the extent of this movement may be formed from a study of the immigration statistics of the United States, which show that in the fiscal year 1912-13 there was an immigration of 174,000 persons of Polish origin. This extensive emigration had the result in the homelands not only of mitigating the competition for the limited range of employment, but also of bringing quite considerable sums to the communes whence emigration had taken place. Seasonal labourers were content in the foreign country with the barest food and lodging; their whole endeavour was to return home with the largest possible savings. From the other type of emigrants also savings flowed into the homeland, and many of them after the passage of years returned and brought their savings with them.

Emigration thus in no way resulted in a diminution of population, but rather tended to an increase, seeing that it certainly increased the population capacity of the country.

After the war emigration recommenced. In comparison with the pre-war time internal migration had undoubtedly acquired importance, but the possibilities it offered were limited, especially for the classes of the population which were formerly concerned in the emigration movements. Emigration and seasonal migration thus assumed increasing importance from year to year, but, as may be seen from the following table, these two types of migration, even at their greatest extent in 1929, lag far behind the pre-war figures. In particular overseas emigration has encountered constantly increasing difficulties. The quota of immigrants from Poland allowed into the United States was only a fraction of the earlier Polish immigration.

As appears from a second table, the emigration figure fell from 243,400 in 1929 to 218,400 in 1930 and to 76,000 in 1931. Over the same period however the diminution in the numbers of returned emigrants was much less marked, the figures falling in fact from 104,500 to 101,100 and then to 87,700. Hence in place of a surplus of emigration of 138,900 persons in 1929 and of 117,300 persons in 1930, there was registered in 1931 a surplus of returned emigrants to the number of 9,700. The year 1932 proved even more unfavourable. Emigration into Germany dropped from 32,300 of the year before to 389 persons only. It is not possible to count upon any resumption of emigration into Germany; it was almost exclusively an immigration of seasonal labour, and Germany has now barred such immigration. The emigration into France has been reduced to a quite insignificant figure; whereas in 1930 the number was 86,000, and in 1931 still 28,400, in 1932 it was 8,100 persons only.

*Polish Emigration and Immigration over the period 1920 to 1932*

	Overseas emigration	Return of overseas emigrants	Continental emigration	Return of emigrants by land
Average for years 1920-				
1924 . . . . .	55,577	33,325	33,708	—
1925 . . . . .	38,449	4,101	42,769	17,131
1926 . . . . .	49,893	6,017	117,616	49,171
1927 . . . . .	58,187	6,799	89,427	73,014
1928 . . . . .	64,581	6,159	122,049	112,921
1929 . . . . .	65,310	6,571	178,132	97,932
1930 . . . . .	46,534	7,625	171,153	93,459
1931 . . . . .	11,770	7,223	64,235	80,455
1932 . . . . .	9,661	5,867	11,766	32,113

On the other hand, the returned emigrants from France in 1932 numbered 25,100 persons, as in that country a proportion of the foreign industrial workers were dismissed. Emigration to overseas countries and return from these countries closed unfavourably in 1932 with an emigration of 9,600 and a return movement of 5,900 persons. Hence the total result of migration between Poles and other countries for 1932 was an excess of returned emigrants of 16,500 persons.

As a consequence the increase of population has, more than ever before, to be accommodated in Poland itself. The difficulties involved are only too readily understood in view of the conditions already explained taken together with the high yearly rate of increase. The natural increase in the population has been as follows:

Years	Births 1000 inhabitants	Excess of births absolute in 1000	per 1000 inhabitants
1927 . . . . .	31.6	433	14.3
1928 . . . . .	32.0	479	15.6
1929 . . . . .	31.7	468	15.0
1930 . . . . .	32.3	526	16.7
1931 . . . . .	30.3	471	14.8



It is not, however, merely the emigration which has ceased, but also the migration from the land to industry and urban life. The absorption capacity of industry has since 1928 declined from one year to the next. If the industrial production of 1928 is taken as 100, in 1930 it fell to 80, in 1931 to 58 and in 1932, to 50, with corresponding increases of unemployment and short time. The unemployment allowance was so small that some proportion of the unemployed, chiefly the younger unmarried men, returned to their relatives in the country. This course was not open to the majority and consequently in the industrial districts of Polish Silesia at the end of 1932 the first beginnings of an attempt were made to attract some part of the unemployed into the country by means of suburban settlement and small holding schemes.

*Emigration from and Return movement to Poland (1000 persons).*

YEARS	Total of emigrants	Total of returned persons	Return + or -	Emigra- tion into	Return from	Emigra- tion into	Return from	Emigra- tion to	Return from
				France		Germany		Overseas countries	
1928 . . . .	186.6	119.1	- 67.5	32.1	10.1	85.4	87.2	64.6	6.2
1929 . . . .	243.4	104.5	- 138.9	81.5	8.4	87.2	82.0	65.3	6.6
1930 . . . .	218.4	101.1	- 117.3	86.5	9.8	77.5	75.5	46.5	7.6
1931 . . . .	76.0	87.7	+ 9.7	28.4	26.2	32.3	45.7	11.8	7.2
1932 . . . .	21.4	37.9	+ 16.5	8.1	25.1	0.4	1.5	9.6	5.9

The rural areas thus have to bear the first brunt of the consequences of this change in the migratory movement, while under present conditions agriculture is in no way in a position to absorb the increase of population. This is readily comprehensible, if the severity of the crisis affecting Polish agriculture is recognised. While the prices for agricultural products have fallen considerably lower than the world market prices, industry has been able to maintain its prices at a better level. The increasing pressure of indebtedness at a low rate of interest has brought about such dire poverty among the peasant farmer class that any Government measures, such as premiums on exports, debt conversion and protection against foreclosure, must remain quite inadequate. It is for this reason that both family farms and the large farms have been forced to limit the number of their wage earning workers. A very clear and detailed account of the transformation of conditions of rural life is given by M. MALINOWSKI in an article on rural unemployment in Poland (1) published in the Prague *Bulletin du Bureau international agraire* in 1933. According to the writer, the number of permanent farm workers has been reduced by half, and even by 75 per cent., in some districts. The employment also of job or seasonal labour has greatly decreased. The mechanisation effected in previous years contributed largely to bring about this reduction in labour strength, which accordingly does not necessarily always entail a limitation of production.

(1) MAKSYMILIAN MALINOWSKI, President of the Congress of the Polish Popular Party. Le Chomage dans les campagnes polonaises. *Bulletin du Bureau international agraire*, 1933. No. 2. Prague, 1933.

The count of workers thus set free, together with those to whom the path of emigration has been closed, swells the total of agricultural unemployment. No precise data are available as to the extent assumed by this unemployment in the meantime. This is extremely difficult to estimate, and it seems to be almost impossible to determine the extent of the immense amount of permanent unemployment on the small and very small holdings.

According to Malinowski the estimate made by experts of the number of rural unemployed in Poland is over five million persons. In explanation of this enormous mass of unemployment in the country, which at first sight seems beyond belief, Malinowski gives some characteristic data in relation to the social grouping of the rural population of Poland. According to these figures, 7.5 million or 35 per cent. of the rural population belong to the landless class, and 11.4 million or 50 per cent. to the class of persons with unduly small holdings (0.5 to 2.0 hectares), so that only 3.9 million persons or 17 per cent. may be regarded as the really independent agricultural population. In any case these data prove that the number of the unemployed must be very great and that it is possible for a small fraction only to find employment on the land. On the other hand the fact that, out of a total of 360, 031 unemployed persons registered at the Employment Bureaus in the first months of 1933, only 3,739 were agricultural workers, is significant of the existing complete incapacity for dealing with agricultural unemployment.

The consequences of this unemployment are the same as in other countries. It presses most heavily on the densely populated areas of small or family farming. Even previously there was not subsistence for all in the crowded home; now in every family, on every small farm, so to speak, there are one or more persons whose labour it is impossible to utilise. The output of each individual is for this reason very small and is used up to the full, and there is no longer any means of improving the output capacity, so that a general and increasing destitution is the result.

It should not be impracticable to find means of arresting alike the crisis and the unemployment. Measures of this kind are land settlement, execution of land improvement works, the general intensification of agricultural production and the improvement of marketing conditions. A number of measures of this type have been passed by the Government, but there can be no immediate or perceptible effect, since any such effect must depend not merely on an improvement in the home situation but also on improvement in the general economic situation. An increase in production, which is the objective of these measures, brings relief only in parts of the country where not enough had been previously produced to meet the sustenance requirements of the population. Another remedy is industrialisation, which with emigration offers the possibility of absorption excess of the rural population. In the case of Poland industrialisation involves a further development of autarchy in national economy, but at present any such development would encounter extraordinary difficulties as regards supply of capital, and in the present situation of the internal market there would be no less serious difficulties attending the future disposal of the resulting industrial products

# SWEDEN

In 1929, again a year of favourable industrial conditions in Sweden, the marked immigration into the towns continued. This was checked in 1930, and in 1931 there was a noticeable "glut" of rural labour forces, a considerable return movement from the towns, accompanied by an increase in rural unemployment.

Before the industrial crisis of 1921-22, unemployment in the country was a phenomenon practically unknown in Sweden, but since that year, it has become permanent. Since 1929 the situation has become markedly worse; in particular the winter unemployment of male workers has increased as a result of the depression in forestry, while in many places there is still a shortage of female labour.

This "glut" or congestion in rural labour appears from the official statistics of land workers. In 1929 out of the whole number of persons making these statistical returns for the Government, 13.6 per cent. only reported that, in relation to the normal labour requirements an over supply of labour was a common phenomenon on certain farms; in 1932 a report to the same effect was made by 53 per cent. The Social Board in its Report on labour supply and wages in agriculture in 1932 (*Sociala Meddelanden*, 1933, No 2) states that nowadays it is quite usual among the small family farmers, and even among the workers living on the farm and paid partly in kind and also the job labourers, for the grown up sons who are unemployed to return to the paternal roof and over long periods to share in the meagre provision of the family.

In addition to rationalisation of industry, unemployment in the towns and the unfavourable situation in forestry, other important causes of rural unemployment are the stoppage of emigration and rationalisation in agriculture.

From 1901 to 1910 the average yearly emigration overseas, in particular to the United States, was 22,404 persons, as against an immigration into Sweden of 4499 persons. In comparison with overseas emigration, that to European countries was insignificant, the average for 1901 to 1910 being 3365 persons against an immigration of 3,943.

In the years 1927-31 the course taken by emigration and immigration was as follows:

Year	Emigration of nationals and foreigners		Immigration of nationals and foreigners	
	Overseas	Continental	Overseas	Continental
1927 . . . . .	10,958	1,889	2,847	2,831
1928 . . . . .	11,683	1,767	2,952	2,656
1929 . . . . .	9,157	1,862	2,879	3,457
1930 . . . . .	3,719	1,963	4,649	2,866
1931 . . . . .	1,165	1,806	5,670	2,720

As this table shows, transoceanic emigration has been much curtailed during recent years, and since 1930 the figures have fallen below those for immigration from overseas countries. Emigration to the other European countries has remained, as in prewar times, below the immigration from such countries.

The extension of permanent grazing lands, the reduction in the area cultivated in root crops and in cereals, the mechanisation and electrification of agriculture and the unfavourable price development which has compelled farmers to make shift with less wage-earning labour, all these causes, according to the investigations undertaken in Sweden into farm economy, have contributed during the last decade to reduce by 15 to 20 per cent. the number of male workers employed on the large and medium-sized farms. For female labour the reduction is even greater, especially on the large farms.

A large number of the superfluous workers on the land have found occupation by means of the assistance loans (*Stödlån*) granted by the State, as voted by Parliament in 1932. These loans, up to a certain point, can be repaid only by the execution of certain kinds of work.

A more effective measure still in the campaign against rural unemployment is to be found in the proposal now before Parliament, made by the Government Rural Housing Commission for State grants in aid of repair or erection of rural dwellings.

The conclusion reached by the Commission is that there are in the rural areas 6,500 houses with small apartments (i. e. with two rooms and a kitchen or less) the condition of which is such that they must be replaced by new buildings, and that there are 55,900 other such dwellings that require repair, and that the total cost of all such work should amount to about 65,000,000 crowns. The initiation of such a building activity would provide throughout the country the employment that is so much needed.

Two types of loans are proposed: repairing loans and building loans. The former are not to cover more than 50 per cent. of the estimated expenditure, and on an absolute estimate, no loan will exceed 1000 crowns. The loans for new buildings should not cover more than 70 per cent. of the estimated expenditure, and in no case will they exceed 2000 crowns.

As regards the repairing loans neither interest nor security will be required. The loan will be considered as liquidated if the work is accomplished within the time prescribed. For the building loans, on the other hand, a four per cent. rate of interest will be charged and a guarantee required with repayment by annual amortisation instalments over twenty years.

The Commission proposes that the 20 million crowns set aside in the State budget for building purposes – a measure intended to meet the unemployment crisis – should be especially employed for encouragement of rural building. “If this is done,” to quote the report of the Commission, “it may be calculated that work will be accomplished that will correspond to a sum many times as great.”

Another measure taken by the State, likely to be of importance in view of the congestion of rural labour and the return of workers from the towns, is the institution of a new loan fund as proposed by the State Land Commission. From this fund it is proposed that forest and farm workers, sons of the small family farmers and of tenant farmers, and other persons who are without means of their own may obtain loans free of interest up to 4000 crowns for purposes of land settlement. An amortisation period of 30 years and in special circumstances

up to 35 years. No amortisation payment will be required during the first five years. According to the investigation made by the Commission enough suitable land is available.

Mention should also be made of private enterprise directed towards the settlement of the unemployed on the land. In February 1933 the National Association "Land for the Workless" (*Riksföreningen Jord åt Arbetslösa*) was founded, the object of which is to find land and occupation on the land for unemployed men who already possess farming experience and whose wives are capable of managing a farm household ; also to provide in the case of juvenile unemployment for instruction in agriculture and some possibility of earning a livelihood on the land.

The Association proposes to act through provincial and local branches distributed throughout Sweden, membership being open alike to those who can offer and to those who are seeking assistance.

Land will be granted either in individual ownership or in co-operative ownership. The Association will endeavour to collaborate with the authorities who are concerned in the assignment of the land settlement loans granted by the State. Where practicable there will be ownership in common of woods, grazing land, the larger and more costly machines, etc.

The provision of land will be met in the first instance from public land. In view of the poverty of most of those who are trying to obtain land, the National Association will place at their disposal the money required for purchase of land, live stock, and even for temporary maintenance.

The funds required will be constituted by contributions from firms and private individuals and from State and communal subsidies.

The settlers are expected to repay the loans by means of amortisation payments extending over several years. Payment may be made in cash or by means of work in land – clearing or other forms of land improvement. A certain proportion of the loan will be remitted as a premium on good farming.

The Association is asking the Government for a contribution of 5 millions crowns to be made out of the unemployment relief funds.

Finally there is the initiative taken by the large Iron-mining Company (Luossavaara – Kirunavaara) which calls for mention as symptomatic of the present emergency. As in accordance with the provisions of the law young people under the age of 20 may not work in the mines, and as in present conditions, many of those who have reached that age are unable to find employment, the Company has established an agricultural three years course for sons of miners in the theory and practice of farming.

#### UNITED STATES OF AMERICA.

The industrial crisis from which the United States as well as the rest of the world is suffering has various and widespread consequences. Unemployment and diminished earnings have obliged people of all classes to seek remedies for financial losses and a radical solution for their difficulties. For years the American people, attracted by high salaries in times of industrial prosperity, have

left the farms for the cities, abandoning the less lucrative even if more permanent work in the fields. The rural youth especially, initiated into city life during the school years, abandoned the paternal roof to find employment in the cities. And for years the fact of the depopulation of the farm and rural districts in the United States was lamented, but the phenomenon seemed to be beyond control. The industrial crisis has proved that the reversal of the movement of the population appears to be equally beyond control. For several years past the flux of the population has not been all in favour of the cities, as had been the case for practically all the decade preceding the crisis. Today the losses in population sustained by the rural districts during the years of industrial prosperity are amply compensated. Problems have arisen not as formerly from a lack of farm labour, but from a too rapid influx of population on the farms, where the agriculturists who had remained true to the land are finding it extremely difficult to derive a fair return from the soil.

The movement away from the towns and villages towards the country first began to attract official attention during the year 1930. The Division of Rural Economy of the Department of Agriculture in Washington received requests for information on mainly the following points:

- a) What parts of the country are most favourable for those who wish to devote themselves to agriculture?
- b) How can one most economically manage the transition from city to country?
- c) About how much land is necessary to assure subsistence for a family?
- d) What is the approximate rent for agricultural land?

This last question, according to the Department of Agriculture (1) came from people who had little ready cash on hand; people who desired to leave the industrial centres hit by the depression, and among these latter some who had saved enough money to retire to the country and invest in agriculture the savings of more prosperous times. From the same source we know that a few requests came from manufacturers desirous of helping their unemployed workmen. In these cases the inquirers desired to be informed where land might profitably be bought for distribution among those who wished to settle on it. Another category of people, who in the early months of 1930 showed a tendency to move countryward, was composed of young men and women of rural families who had gone to the villages and cities and were now returning, on account of lack of employment there, to their homes and to work in the fields (2).

It is evident that so far, officially at least, the back to the land movement has not caused any preoccupation. Indeed the inquiries reaching the Department of Agriculture, seemed to indicate a carefully planned scheme on the part of the inquirers. The movement however appeared to have been sufficiently important to deserve a special mention in an official statement issued on 18 February 1931 by the Department of Agriculture, wherein the fact is stated that, "for the first time in ten years the farm population has increased as a result of a countryward

(1) See *The United States Daily*, Washington, D. C., 24 January, 1931.

(2) C. J. GALPIN in *The United States Daily*, Washington, D. C., 24 January, 1931.

movement of the city population " taken together with the normal surplus of births over deaths in the farm population. The statement relates naturally to the year 1930. During 1931 there seems to have been a net increase of the farm population in consequence of immigration from the cities and the villages, independent of the increase by births. The period is marked also by the beginning of another phase of the back-to-the-farm movement, of which more will be said later.

It must be stated at once that, so far, figures on the extent of the movement are not sufficiently clear to justify their being given here as absolutely reliable. One can only take some fundamental census data and notice the general trend of the farm population up to the year 1930 when the back-to-the-farm movement is generally admitted as having started in earnest. The census figures of farm population are as follows :

1920. . . . .	31,614,269
1925. . . . .	28,981,668
1930. . . . .	30,445,350

These figures are not strictly comparable, the basis having been slightly different in 1925 from what it was in 1920, and the census of 1930 having been taken on 1 April instead of having been taken on 1 January, as was the case with the previous censuses. But even allowing for adjustments to make the figures comparable it seems clear that while, as between 1920 and 1925 there had been a decrease in the farm population, between 1925 and 1930 there was an increase. Hence at some date in the neighbourhood of 1925 the number of persons coming from cities and villages to the farms added to the natural increase of the farm population (that is, the excess of births over deaths) must have begun to exceed the number of persons leaving the farms and going to the villages and cities.

When this first occurred, it is not easy to say. An attempt is made by the Bureau of Agricultural Economics of the Department of Agriculture to estimate from year to year the movement of the population from farms to cities and from cities to farms, and according to these calculations the movement back to the farms, as mentioned above, was greater than the movement away from the farms for the first time in 1930, but the figures have been more than once revised, and even as finally revised do not appear to be consistent with the census figures.

But though the statistics of the movement may not be complete and though it may not be clear when it first became important, there is ample evidence that in recent years there has been a very considerable flow of population from cities and villages to the farms. By the end of the year 1930 and during the year 1931 the movement had become so noticeable as to be officially recognised as " general ". Only the New England States and the Southern Atlantic States still showed the tendency to a prevalence of a cityward movement. But also these States have not failed to register one side of the back-to-the-land trend which the available data do not take into consideration. There are a number of families in every part of the United States who since the beginning of 1930 have tried to mitigate the evils of the depression by planting vegetable gardens varying in size from  $\frac{1}{4}$  to

2 acres, which they have bought or rented, or have found unoccupied and taken possession of, near their homes. Charitable societies have often helped these improvised farmers to obtain seeds, implements and fertilizers. Their object is to cultivate vegetables and fruits for their immediate use. But it is evident that this movement, which is indeed extremely widespread, cannot be considered part of the real movement towards the country. As soon as industrial conditions improve, the majority of this group will abandon the land cultivated from necessity. The Bureau of Agricultural Economics of the Department of Agriculture explicitly declares that this attempt to obtain food at low cost must not be confused with the real back to the land movement on the part of urbanized rurals, or those who intend to devote themselves profitably and permanently to agriculture (1). The intensity and generality of the movement during the years 1931 and 1932 are admitted. The Department of Agriculture, in November 1932, stated that if the tendency to return to the land continued with the same intensity as in the first three months of the same year 1932, "there will have taken place a complete reversal of the situation existing during the years 1920-1930", during which the trend had been chiefly citywards. Whatever the exact figures will be when all the data gathered by the Bureau of Agricultural Economics of the Department of Agriculture are properly tabulated, the fact remains that the same Bureau at the end of April 1933 announced that "the farm population of the United States is now the largest in history." (2). The complete reversal has occurred: indeed, according to the Bureau of Agricultural Economics, the countryward movement during 1932 exceeded the cityward trend by about 533,000 persons. By adding to this number the surplus of births over deaths on farms, which accounts for 468,000 persons, according to the same source, an increase of over one million in the year 1932 alone may be considered as a safe estimate. So that it can be safely admitted that on 1 January 1933 the farm population in the United States reached the highest mark in the history of the country.

These figures give a clear idea of the vastness of the movement. Experts complete the picture by giving a detailed description of its characteristics. "Dwellers in the cities and towns, forced out of employment by the curtailing of business and industry and the stilling of factory wheels, tired of walking the sidewalks looking for work that does not exist, unable to pay the high rents or buy food for their families, unwilling to accept charity, are fleeing in mingled despair and hope to the country and to the land." (3). So wrote Harry O'Brien in the *Country Gentleman*, a review the standing of which guarantees the trustworthiness of the statement. The same author observes that the arrival of these "refugee victims of the depression" has created a series of new problems for the rural districts. For, even though a certain number have taken up land according to the advice of the Department of Agriculture, the great majority have rented

(1) See *Farm Population and Rural Life Activities*. Bureau of Agricultural Economics, U. S. Department of Agriculture, 1st September 1932, Vol. VI, n. 3.

(2) See *The Journal of Commerce*, New York, 27 April 1933, p. 2.

(3) See *The New Stampede to the Land* by Harry O'BRIEN, in *The Country Gentleman*, Philadelphia October 1932.



vacant land, when they had means to do so, or have installed themselves on abandoned farms, without asking whether the abandonment of the land by the former owners was due or not to the impossibility of getting fair returns out of this land. Responsible authorities however are now giving the closest attention to this side of the problem. Unquestionably the real farmers who for generations have farmed for profit, and who have for years suffered from the economic crisis, find it more difficult today to dispose of their products because millions of individuals have turned to what is called "agriculture for subsistence". In the beginning this kind of agricultural production was limited to small plots cultivated by city dwellers. But since the second half of 1931 the newcomers to the rural districts have extended subsistence farming to these districts also. The question arises how many of them, when they have come through the crisis, even if they are really anxious to become permanent farmers, will be able to do so on the land they have acquired or occupied. Merely to state the problem is to realize its gravity. And, in fact, the 1932 Yearbook of the U. S. Department of Agriculture observes, in relation to this situation: "Undoubtedly the present trend is fraught with important agricultural consequences. It will increase the difficulty of adjusting farm production to market requirements and will weaken the urban markets for agricultural goods. On the other hand it has a good side, for subsistence is more easily got in the country than in the town in periods of trade depression."

The stampede to the land has multiplied the farmers' difficulties in every but one respect: it has further cheapened farm labour. But can this be considered an advantage for either the farmer or his employees? From what has been said so far it appears that the course of the back-to-the-farm movement has both been difficult to follow and in itself has lacked homogeneity. Some have bought the land on which now only what is required for the needs of the family is produced. Others have rented the land and dwelling they occupy and cultivate. But the great majority of these new "pioneers" have taken possession of land and buildings found vacant along the road they happened to be following in their flight from the cities and villages. Where no buildings existed, cabins and cottages have been built; and in some very poor sections of Southern and Mid-Western States, one can see families living under tents. Those who have bought land have generally acted with a certain amount of prudence, although even among these not a few have fallen the victims of speculators. But the mass of the hundreds of thousands who have gone to the country "have gone first of all to areas of marginal land. This is land that in recent years had been deserted; land where it is hard to earn a living, where soil is sandy or hilly or wooded, where abandoned farms have reverted to the state for nonpayment of taxes, where tax burdens are almost intolerable upon those who have remained... All are hoping for a cheap home, a garden, a few chickens, food and shelter and a chance to do some work." (1). Nor is the picture of the situation presented in a less alarming way in official documents. At page 469 of this 1932 Yearbook

(1) See "The New Stampede to the Land" by HARRY O'BRIEN, in *The Country Gentleman*, Philadelphia, October 1932.

of the U. S. Department of Agriculture one may find the following remarks : " A large number of jobless families have undoubtedly moved to the country as potential farm owners, regardless of the fact that well-established farmers are experiencing difficulty in maintaining a satisfactory standard of living. Without advice having a sound actual basis many of these new farm families are doomed from the start to failure. Undirected and misdirected settlement has in times past resulted in the loss of economic and human resources, and the chances for loss to-day are as great or greater than ever, because of the limited need for increasing our net crop average. "

Save for some rare exceptions, this picture of the situation holds good for the whole of the United States, and remedies for it are not easy to find.

A better understanding will be reached of what has been attempted in the matter of remedies, and of what may eventually be done to improve the situation if we turn our attention to actual conditions, beginning with the value of farmland. The following figures speak for themselves. The censuses taken in 1920 and 1930 indicate that for the country as a whole the per acre value of farmland and buildings was 30 per cent. less in 1930 than in 1920 and that by far the great majority of the States in 1930 reported farm real estate values much below those of 1920. The average value per acre of farm real estate was \$ 48.52 in 1930 (1) as compared with \$ 81.42 in 1920 (2).

In the year 1930-31 not only has the decline of farmland values been more severe than in previous years, but it has been far more general, reaching in some degree at least to nearly every corner of the Country. For the year ended March 1931 in fact the figures given by the Bureau of Agricultural Economics of the Department of Agriculture indicated declines in 46 of the 48 States, with no change for the remaining 2, whereas the previous year 24 States had experienced declines, 18 had remained unchanged and 6 had reported small increases (3). The main cause of the reduced farmland values has been a sharp decline in the prices of agricultural products. Hence incomes have been reduced. Reduced incomes together with heavy taxation have caused havoc among farm owners. The census of 1930 shows that up to that time out of a total of 2,911,644 farms which were operated by full owners, 1,569,178 were free from debt. The total of the mortgage indebtedness reported upon the 1,145,737 of the remaining farms reached the sum of \$ 4,080,176,438. These mortgaged farms in 1930 had an estimated value of \$ 10,307,733,037 and the mortgages amounted to 39.58 per cent of the value (4). But conditions deteriorated rapidly in the course of the year 1930-31. Land has become cheap : yet its depreciation has made prospective voluntary buyers very cautious, and

(1) See " Yearbook of Agriculture " 1932. Pag. 474-

(2) Fourteenth Census of the United States, 1920, Vol. V. Department of Commerce, Bureau of Census. Washington D. C. 1922.

(3) The Farm Real Estate Situation, 1930-31. U. S. Department of Agriculture, Circular No 209 December 1931.

(4) " Why Land is so cheap " by Louis H. COOK, in *The Country Gentleman*, Philadelphia, December 1932.

the market would have been inactive, had it not been for the sales through mortgage foreclosures, tax delinquency, bankruptcy proceedings, etc. At the end of February 1932 the Department of Agriculture at Washington calculated that nearly one tenth of the farms all over the country had been lost by forced sales in five years. Regarding taxation on the farm real estate the Department, at the same date, reported that rural property taxes were double the pre-war level (1). For the year ended March 1931, an average of 26.1 farms out of 1000 were sold through one of the causes mentioned above. The average for 1929-1930 had been 20.8 and for the year before 19.5. The immediate consequence of this unfavourable situation of the farmland market is that in practically no part of the United States until very recently has it been possible to sell farm land without suffering competition from forced sales (2).

The Federal Loan Banks; Joint-stock Land Banks and Life Insurance Companies (3), that is the chief creditors of agricultural communities all over the Country, at the end of February 1932 found themselves the owners respectively of 72,011,916, 35,445,715 and 2,000,000,000 dollars worth of agricultural land. These figures do not include sheriffs' certificates, delinquent interests, instalments due at that time and other forms of farmers' obligations in the hands of their creditors. While figures relating to the situation resulting from the increasing seriousness of the crisis during the year 1932-33 are not as yet available, official documents and experts for specialized papers and magazines invariably assert that conditions are far worse today than they were a year ago (4).

It has been remarked before that the established farmers were benefited in one way by the wave of returning or new settlers in the country districts. They could get all the help they might wish exceedingly cheap. In fact the wages of farm hands came down and have now reached the lowest point for 34 years. No other category of workers has seen its wages shrink to such a low level as farm hands. On 1 January 1933 the general level of farm rate wages declined to 74 per cent. of the five years pre-war average. The striking figure of a 12 per cent. decline was registered in the course of the last three months of 1932. For the whole year 1932 the wage level for these workers was about 24 per cent. lower than the level in 1931. Expressed in cash figures, the wages of farm hands on 1 January 1933 ranged from 40 cents in South Carolina and Georgia to 1.75 in Rhode Island (5).

(1) See *The United States Daily*, Washington, D. C., 17 January 1933.

(2) Measures have now been taken to stop forced sales and foreclosures as part of the Roosevelt's administration plan to aid the farmers. Of such measures mention will be made later.

(3) One single company in New York has nearly 200 million dollars invested in farm loans, and owns 15,000,000 dollars in farm lands. It is interesting to notice that in spite of depreciation of values, this same Company does not consider its losses at all heavy compared with losses due to the depreciation of other, chiefly railroad investments.

(4) See *The Country Gentleman*, Philadelphia, Pa., December 1932, "Why Land is so cheap", by Louis H. Cooke.

(5) The States of Rhode Island and Minnesota seem to represent two fortunate exceptions to the general rule of agricultural depression in the United States. As regards the State of Rhode Island, according

But it does not appear that many established farmers have been in a position to avail themselves of this exceptional abundance of cheap labour. In fact ever since the present agricultural crisis began, farmers have been forced to economize on everything. And although the repeated appeals of the Department of Agriculture that acreage be reduced and production limited have found but little response on the part of most farmers, it is a fact that they have tried to reduce their expenses and have limited their use of hired labour to a minimum (1). Mechanization had already done its part in reducing the number of people needed on the farm. "Because agriculture can no longer expand under existing conditions, it will be increasingly unable to care for the unemployed farm workers who are thrown out of a job by improved machinery" the *Monthly Labour Review* published by the Department of Labour in Washington wrote as far back as October 1931. And it added: "The process of agricultural mechanization in this country has just begun. It is likely that within the next few years practically all wheat produced in this country will be grown under conditions existing in the industry in the Great Plains region and in the Northwest: that is, on large farms with big hook-ups of the most modern machinery, a maximum of mechanical power and a minimum of man power." (2).

Large number of unemployed men and women from cities and villages have made their home in the country since the remarks quoted above were published. Indeed the situation cannot have improved. Plans to help unemployed city dwellers to find work on the farms were started soon after the industrial crisis began to show itself in bread lines, in appeals to charitable institutions and in other signs of growing distress. But it was soon found that labour was not wanted on the farms. Yet the-back-to-the-land movement continued and grew. It has already been seen how so many of these people settled on the land. So far nothing would appear to have been decided as to how the question of land ownership is going to be settled if and when old owners claim land which newcomers have occupied simply because they found it abandoned. It is known however that forced sales and foreclosures have been stopped because not only they proved ineffectual, but also because they made a bad situation decidedly worse: so much so in fact that legislative measures were deemed necessary to regulate this matter. It was on 9 February 1933 that the Senate Committee on Banking and Currency

to Harry R. Lewis, Commissioner of the Department of Agriculture of the State, its favoured situation is due to the fact that only the best agricultural land has been farmed and there has been a considerable reduction in rural farm population since 1925. Improved methods of production, according to the same authority, have allowed the maintenance of normal conditions in spite of the crisis. (See *The United States Daily*, Washington, D. C., 19 March 1932).

As regards the State of Minnesota, the Chairman of the Rural Credit Bureau of the State, C. F. Gaarenstrom, in an editorial which appeared in *The United States Daily* on 16 March 1932, explained that the successful policy adopted by the State Legislature to make Minnesota a State of farm owners has made it possible for it to offer fully improved land at exceptionally attractive prices and conditions of payment, thus bringing "the land back to the taxation rolls where it belongs."

(1) See *The United States Daily*, Washington, D. C., 19 January 1933.

(2) See *Monthly Labour Review*, October 1931. Published by the Bureau of Labour Statistics, Department of Labour, Washington, D. C.

reported favourably on the Hull Bill "designed to prevent further foreclosures of mortgage farm lands for a period of two years". And on February 27th, 1933 the House of Representatives in Washington voted the Steagall Bill "extending delinquent payments on farm mortgages over a period of ten years and authorizing loans to be made direct to farmers by Federal Land Banks in localities where Farm Loan Associations have not been organized." In addition to extending the period of delinquent payments the Steagall Bill also provides that "any land bank may carry real estate as an asset for a period of five years at an amount equal to the bank's investment at the time of acquirement of such real estate." (1).

But broader and more permanent measures have long appeared to be needed if American agriculture is to maintain the standard it had attained. Agricultural experts have long advocated a State and Federal Land policy. Attention was given to their suggestions by Mr. Hyde, the Secretary of Agriculture under Mr. Hoover's administration, and steps were taken to prepare a "National Land Policy". Under Mr. Hyde's scheme two Committees of experts were to study the land situation all over the Country and to submit a practical report suggesting a form of federal action in the matter. The Committees, known as the National Advisory and Legislative Committee on Land Use and The National Land Use Planning Committee, in the early Autumn of 1932 considered the situation created by the back-to-the-land movement so serious that they issued a joint statement made public by the Department of Agriculture on November 17 of the same year. In that statement the opinion was expressed that "a wholesale unguided movement back to the farm would be the poorest possible solution of the unemployment problem", and that "to sponsor such a movement would permanently affect all hope of agricultural stability and prosperity." The statement further said: "We ask all who seriously propose a wholesale back to the land movement at this time to consider first these points: the distress of American Agriculture for a full decade has been a major factor in the severity of the present economic depression. Industry now knows, as perhaps it has never known before, that the country's most basic need is a prosperous agriculture.... To propose now to shift vast numbers of the industrial unemployed out on to the land, indiscriminately and without guidance, is to propose an increased agricultural production at precisely the wrong time." (2). Since Mr. Hyde's first action (in February 1932) and the joint statement quoted above, the need for a definite land policy has become more acute, inasmuch as, contrary to all expert advice, just such land as should never have been put under cultivation or which should have been allowed to revert to some more profitable use, has been occupied by the "pioneers" of the back to the land movement. In due time figures will be available to show the extent of this unprofitable land exploitation. In the meantime, while plans are being devised for a radical solution of the farm situation in the United States, temporary measures are being advocated both officially and by other expert parties.

(1) See *The Journal of Commerce*, New York, 28 February 1933.

(2) See *The United States Daily*, Washington, D. C., 17 November 1932.

In an editorial published on 2 March 1932, the Commissioner of Agriculture of the State of Arkansas wrote: "If there was a sensible time for a live-at-home plan, it is now. A live-at-home farming plan calls for the production of enough of all the vegetables and cereal crops that may be necessary for human food for those on the farms. This includes fruits and berries of all kinds... In other words, the safe plan is to provide on the farm all of the food and feed required..." (1). And on 3 January 1933 the Bureau of Agricultural Economics in its Year-end-Review of the Agricultural Situation of the country remarked that reports from every section gave full details regarding the trend towards a subsistence type of farming on the part of established farmers who found profit farming increasingly difficult. And yet, the Bureau of Economics further remarked, "from all quarters is confirmed the story of the migration from town back to the country on the part of crowds for whom the plight of the regular farmer does not seem to be a deterrent." At the same time however, the Bureau states that "under the stress of unprecedented circumstances agriculture has demonstrated once more its capacity as an economic shock-absorber" (2). It might be noticed in passing that the views on the situation as expressed in the Year-end Review seem to conflict with those expressed in the statement issued on November 17th 1932 by the Committees on Farm Policy, although it agrees with the views expressed in the 1932 Yearbook which says: "in time of stress unemployed city families, particularly those who have had previous farming experience, look to the farms for a means of subsistence." (3). But one is once more inclined to remark that the back-to-the-land movement in the United States assumed from the start unforeseen proportions and developed rapidly. Its potential consequences are not yet clear. If however the subsistence type of farming extends, there is no question that American agriculture will undergo a revolutionary modification. There is no question too that no farming on a large scale is possible or profitable as long as the present crisis lasts. Determined efforts have been and are being made to offset the worst and most objectionable characteristics of the crisis in so far as it affects agriculture. Mr. Hoover, on 20 February 1933, two weeks before his retirement from the Presidency of the United States sent to Congress a special message intended to obtain immediate action for the relief of the farmers and of the agricultural situation in general. Upholding a principle which the Secretary of Agriculture under his administration, Mr. Hyde, had repeatedly sponsored, Mr. Hoover in his message asked Congress to authorize the forced withdrawal from cultivation of all the marginal land, which should revert to purposes other than agricultural. Undoubtedly Mr. Hoover's plan was meant to consider also the situation of the hosts of new farmers most of whom had found refuge precisely on marginal land.

(1) See *The United States Daily*, Washington, D. C. 2 March, 1932. An Editorial by Earl PAGE; Commissioner of Agriculture, State of Arkansas.

(2) See Year-end Review of the Agricultural Situation, The United States Bureau of Agricultural Economics, Department of Agriculture, 3 January 1933.

(3) See U. S. Yearbook of Agriculture, 1932, page 469.

Congress however did not act on the proposed measure, which, outside of Congress itself, met with considerable criticism and opposition (1). The new Secretary of Agriculture, Mr. Wallace, took up the matter of farm relief immediately after the presidential inauguration. On 9 March 1933, he called a meeting of the leaders of the American Agricultural Associations. In his address to them Mr. Wallace said: "Any program (for farm relief) that is adopted must provide for an orderly retreat from those acres for which there remains no foreign purchasing power." In other words the new Secretary for Agriculture practically made his own the plan of his predecessor in office and announced that the policy of the new administration was to reduce acreage and production.

On the other hand President Roosevelt, shortly before his inauguration at Washington, addressing a large crowd of students from the American Universities, told them that they must prepare to return to and take up duties on the land, because the cities, even with returning industrial prosperity, would no longer provide jobs for all of them. On several occasions during his electoral campaign Mr. Roosevelt had advocated a policy of encouragement of an orderly back-to-the-land movement and had announced a plan of his own to find work for unemployed at large. His plan is now known to include land reclamation on a broad scale in various sections of the country. But Secretary Wallace, in the address quoted above, mentioned the fact that no definite announcement could be made concerning the farm relief plan of the Administration in its details, because, the Secretary said, "with the economic situation shifting from day to day, any relief plans will have to change to reflect new conditions." The farm leaders whom Secretary Wallace had called into consultation and to whom he had confided the charge of preparing a farm relief scheme, failed to agree and decided to report to the Secretary that they would back proposals whereby Congress should authorize President Roosevelt and the Secretary of Agriculture himself "to take over responsibility to solve farm ills." (2). This authority has been granted following a short message which the President sent Congress on 17 March 1933, asking for "immediate enactment of a farm relief program empowering the administration to control production and increase prices. By the measure approved by Congress Secretary Wallace is empowered to reduce acreage of specified farm products and compensate producers for such reduction..." The funds to bring immediate efficient relief to indebted farmers have also been voted by Congress. It has been seen already that forced sales and mortgage indebtedness liabilities have been suspended. But it cannot be said that the problems deriving from the magnitude of the landward movement during the last few years appear to have been considered apart from a general and thus far unknown land policy scheme. It may be said however that the official attitude towards the back-to-the-land movement is still one of watchful waiting and uncertainty, as evidenced by some

(1) For a critical discussion of this plan see *The Journal of Commerce*, New York, 23 February 1933.

(2) See *The Journal of Commerce*, New York, 14 March, 1933.

very recent statements by Dr. Theo B. Manny of the Division of Farm Population and Rural Life of the United States Bureau of Agricultural Economics. Dr. Manny in an address before the Third Conference of Purnell Research Specialists in Rural Sociology said: "Judging from the frequency of citations in the press and in periodical literature, the so-called back-to-the-land movement is at the forefront of the popular interest. The research project of the United States Department of Agriculture concerning changes in number of persons living on farms and in movements of persons to and from farms is intended primarily to show only the national picture. In one way or another, several States are making an attempt to get these changes, but on the whole very little is being done along this line." One ray of light however comes from the same Dr. Manny, who, having carried on an investigation on changes in farm population during the past year, extending his researches over 15 States, has reported as follows: "practically all vacant habitable farmsteads have been reoccupied and in some areas, especially in the South, migrants were trying to develop subsistence farms on cutover land and other idle unimproved acreage. This is in addition to the substantial movement of city unemployed back to the farms of parents, relatives and friends. Future back-to-the-land movements will be increasingly handicapped by lack of occupiable buildings and acreage, according to most of the people who were consulted." (1).

Thus it would appear that the stampede to the land is over, in its most dangerous form at least. It now remains to be seen what the development of the new land policy of the Roosevelt administration is going to be, and whether the problems arising from the extent of the back-to-the-land movement are going to be considered *per se* or be simply a part of the general scheme of farm relief. It is clear however that something will have to be done quickly to relieve a situation which, according to official sources, spells failure for hundreds of thousands of people (2).

#### OTHER COUNTRIES.

In *England and Wales*, in spite of industrial depression, and the fall in emigration, it can hardly be said that there is any movement back to the land of persons intending to settle permanently. The number of holdings of more than one acre has in recent years been steadily falling and so, too, has the number of workers occupied on these farms. During the five years 1928 to 1932, the number of such holdings fell from 400,895 to 390,000 and the number of regular and casual workers employed thereon from 772,825 to 697,100.

The establishment of small holdings for the settlement of unemployed is not, in the opinion of the present Government, a practical plan so long as there is no means of assuring to small holders the possibility of gaining a fair livelihood. On the other hand, however, the Government has contributed towards the cost of

(1) See *Farm Population and Rural Life Activities*. U. S. Department of Agriculture Economics. Washington, D. C. Vol. VII, N. 2, April 1, 1933.

(2) U. S. Yearbook of Agriculture 1932, page 469.



providing garden allotments for unemployed town-workers, a relief measure promoted by various voluntary agencies and especially by the National Council of Social Service and the Society of Friends. In 1930-31, for instance, the Society of Friends provided such allotments for 64,000 unemployed and it hopes in 1933, from its own funds and the Government grant, to be able to provide for another 80,000 and also to begin an experiment in establishing men permanently on the land. In addition, a co-operative scheme of production and marketing will be tried with vegetables, fruit, eggs, poultry and pork products.

In spite of the almost complete stoppage of the usual migration from the country to the towns, the shortage of workers in *French* agriculture still continues.

Great efforts, for which the Central Agricultural Labour Office is largely responsible, have however been made to supply the labour required by giving employment on the land to unemployed workers from the great industrial centres.

In 1932, work was found in agriculture for 22,000 persons, of whom 90 per cent. were alone and 10 per cent. were accompanied by their families. Of this number, about 15,000 were foreigners, and only 7000, or less than one third, French Nationals. The results have, however, not been very encouraging, despite a careful selective policy in accordance with which such employment was given only to persons who were of country origin and had left it comparatively recently. Many of these workers left the farms to which they had been assigned after a very few days, during which they were of no use but rather a cause of trouble and disturbance.

In order to assist unemployed industrial and commercial workers of French nationality, who have the opportunity of returning to their native districts to take up employment in agriculture, such persons have been allowed, by a circular letter sent on 2 January 1932 by the Ministry of Labour to the Prefects, to obtain tickets at half price on the main railway systems up to 30 June 1932. The railway companies were to bear one-quarter of the cost of transport, the other quarter being refunded by the Government. The half fares are granted also for the wives and children of the married men and for their household effects.

In order to provide unemployed industrial workers with employment in agriculture such as is usually given to foreign seasonal workers, the *Austrian Government* allows for each man so placed for a period of six months a bonus not exceeding 150 schillings, which sum in case of non-specialised work is paid in its entirety to the employer boarding and lodging the worker and paying him wages from the start. In case of workers employed on beet cultivation, on the other hand, which requires a certain period of apprenticeship, two-thirds of the bonus is paid to the worker and the remainder to the employer. The results of this policy have however so far not been encouraging.

With the object of reducing the number of unemployed persons in the towns and of remedying the shortage of labour in the country districts, the *Latvian*

*Government* in 1932 resolved that farmers finding work for such unemployed during the winter months should receive a State subsidy of 10 Lats per month. If labourers so engaged work for a farmer during three months without a break, they receive a premium of 10 Lats, increased to 15 Lats if they give uninterrupted work for 6 months. A number of unemployed were induced to go into the country by this State subsidising of wages. In 1933, however, the financial situation did not allow of the renewal of this system of premiums.

To encourage the transfer of these unemployed to the country, the Government undertook to pay the cost of their transport by railway from the town to the place of employment. If the worker was accompanied by his family the cost of the journey for his family was also defrayed and the cost of transport of their baggage.

In 1932, the *Estonian Government* started the first experiment in that country in settling families of urban unemployed workers upon the land as small farmers. The first group to be settled consisted of 80 selected families, to whom over 1000 acres of good farming land were allotted.

The clearing of land and the necessary improvements, such as roads, ditches, fences, buildings, etc., are made by the unemployed workers themselves; under the direction of Government experts. The necessary expenses for the improvements and the wages to the workers engaged thereon are advanced out of the public unemployment relief funds.

In *Brazil*, a special fund has been established for the settlement of unemployed persons in agricultural colonies, out of which the Federal States may receive Government subsidies, provided that they submit the plans of the proposed colonies to the Ministry of Labour and choose the locality for them with due regard to climatic conditions, the quality of the land and the means of communication with consuming centres. The price of the holdings is fixed by the Ministry, or by the Federal State concerned if the colony has been established by it, account being taken of the local conditions of each colony and of the value of the land. Workers joining the colonies receive special privileges set forth in a Decree of 12 December 1930. The work of establishing the settlers may be undertaken by services approved by the Minister of Labour, or by private or religious institutions owning land suitable for settlement and authorized to receive loans.

Among the various Federal States it is especially Sao Paulo that has taken measures to place urban unemployed workers in employment in agriculture. In the first ten months of 1931, the competent service of that State transferred 47,063 workers from the capital to the interior.

In *Australia*, the *New South Wales Local Government (Small Holdings) Amendment Bill* passed in December 1932 empowers municipal councils and shires to relieve unemployment by acquiring land for the purpose of providing small holdings for settlement.

Also in *New Zealand* land settlement takes a leading place among the Government measures taken or proposed to cope with unemployment. In 1932 new legislation provided for the establishment of a rural allotment scheme whereby married men will be placed on sections of from 5 to 10 acres with a small cottage. The allotments will be distributed throughout rural districts.

The occupant of the Section will work some of the time for himself in providing his own sustenance and part of the time for a nearby farmer or anyone also who can employ him. Some part of the existing relief allowance must however be continued as it is recognized that workers who are thus moved out will not immediately be able to earn an independent livelihood.

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[This Journal, which is to appear quarterly, is the organ of the Economic Society of South Africa, the objects of which, as stated, are to ensure the thorough discussion of all economic questions affecting South Africa, and to this end to enlist the active co-operation of all persons, of whatever school of economic thought, capable of throwing light on these questions.

At this juncture in South African affairs, the appearance of such a Journal dealing with the economic issues that are affecting the country is of particular importance. Since moreover in South Africa, to quote the phrase of one of the contributors, the outlines in the field of economics "can be more easily and more clearly discerned than in the countries of Europe where conditions are more complex", it may well be that in any analysis of the various aspects of the South African economic situation some light may be thrown upon the problems that are perplexing the older countries.

Three of the articles deal with the monetary and price questions. That by Prof. S. Herbert Frankel, professor at the University of the Witwatersrand, Johannesburg, on "South African Monetary Policy" has direct reference to the position of the Union as exporter of agricultural and pastoral products, an important factor in the general situation of the national income, affected as this has been first by the maintenance and now by the abandonment of the gold standard on the part of the Union Government.

Prof. Frankel shows that the decline in the value of exports (excluding gold, and mainly pastoral or agricultural) has been the main factor in the decline in the national income which has taken place from 1929 onwards to the end of 1932. The general fall in overseas prices of agricultural products was accentuated in South Africa by the over-valuation of the South African pound due to the policy of maintaining the exchange at parity with gold. The result was that by 1931 the prices obtained for these exports had fallen by 44 per cent. below the prices of 1929, and by 61 per cent. below the 1924 level. On the other hand, as the local prices of commodities, although also showing some decline, remained high in comparison, while wages were unaltered and taxation increased, production costs for exporters were not appreciably diminished. Prof. Frankel is of opinion that the policy of maintaining the gold parity should have been accompanied by a firm policy of deflation, reducing thereby local prices and wages and other fixed charges, and thus ensuring the necessary fall in the costs of the export

industries. This policy, always difficult and unpopular, was not fully carried out, and instead a policy was embarked on of export subsidies and of large special customs duties which in reality aggravated the situation. There is now a general belief that the exchange depreciation effected last January constitutes a cure for all the economic evils of the country. In Prof. Frankel's view this is not the case, and he suggests that the real remedy may lie, now that depreciation has been effected, in bringing about a reduction in nominal wages salaries and fixed charges, thus counteracting the rise in wholesale and retail prices resulting from the depreciation. Lower costs in the export and primary industries would thus be effected. The writer does not maintain that it will be an easy matter for any government in South Africa to reduce nominal wages, but considers that it is preferable to the alternative policy of inflation with rise in the cost of living and consequent reduction in real wages, etc. Whatever policy is adopted it is essential to bring about a reduction in the real costs of the export industries and an increase in efficiency. As he says in South Africa "the agricultural industry is at present on a highly artificial price basis, and a large part of agricultural production is divorced from world price levels — a position that cannot be left unrectified indefinitely."

In accordance with the "symposium" method adopted by this Journal, this article is followed by an Addendum by Prof. Robert Leslie of the University of Cape Town, dissenting from some of Prof. Frankel's conclusions.

An article with bearing on agriculture is that by Dr. J. G. van der Horst (1), who takes as his subject the changes in the legal or institutional framework of economic activity, and maintains that the conception of ownership has thereby been definitely affected, illustrating this view from the case of a South African farmer in the Cape Province engaged in mixed farming. An account is given of the operations of the various Control Boards established from 1925 onwards, dealing with fruit, dairy produce, meat, maize, tobacco, and the writer submits that "as far as the principal agricultural products are concerned, the rights left to the owner of property are merely the right to consume it himself and the right to destroy it. The rights which give rise to its value in exchange have been, or are about to be, taken away from him and vested in Boards subject to the control of a Minister." The theme is presented with vigour and much valuable detail, but it may perhaps occur to the reader that in view of the intricacies of modern overseas marketing of agricultural products, the individual farmer may not altogether regret the loss of freedom to choose implied in regulation. Moreover in South Africa it has been largely the farmers themselves who have advocated and indeed urged these regulating measures.

The article on "Robinson Crusoe Economics" by H. M. Robinson is lively and draws an apt moral — applicable not only in South Africa — as to sound methods of capital building and upkeep of capital.

The Journal also contains book reviews, notes on official publications and reports, together with valuable lists of official publications, South African and other, a table of official Union and foreign statistics, and a bibliography of new books on economic subjects.

Among the Notes on official publications, that by Margaret L. Hodgson, on the Report of the Native Economic Commission 1930 to 1932, is of special interest, as calling attention to the limitations, as well as to the value of the Report, the main recommendations of which, as regards the Native Reserves and the Natives on European

(1) The rehabilitation scheme recently proposed by Dr. van der Horst for placing the farming community once more on a self-supporting basis by means of a Government issue of land stock redeemable over 48 years has attracted considerable attention in the Union.

Farms, have already been outlined in this Review (1). Miss Hodgson, who is also joint author of two recent publications on Basutoland and the Bechuanaland Protectorate, and has an intimate knowledge of Native problems, stresses, in regard to the admittedly needed reforms in the "labour-tenancy" system obtaining for Natives on European farms, the more progressive view contained in the Addendum Report. According to the proposals there made, an alternative system should be introduced, whereby unutilised land held by Europeans might, under the control of local committees, be leased to natives on a cash rent basis, subject to stipulations as to proper cultivation, including adequate fertilising. Among the advantages of this would be that the interest of Natives in improved agriculture would be stimulated, and as their bargaining power in regard to their labour would also be increased, the conditions of "labour tenancy" would in all probability also improve].

C. H.

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(1) Previous list June 1932. To be continued December 1933.

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(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.



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# MONTHLY BULLETIN

## OF

# AGRICULTURAL ECONOMICS AND SOCIOLOGY

## FARM ECONOMICS

### Extent of the Representative Character of Farm Accountancy Statistics.

If a careful study be made of the tables contained in the publication *Farm Accountancy Statistics*, it will be recognised that the sources drawn upon for their compilation have been extensive and varied, while throughout based upon actual farming experience. The fundamental object in making this study of farm accountancy results has been to present a true picture of the farm in all the detail of its activities and circumstances. In other words, farm accountancy is the script corresponding to the vital phenomena of the farm. The figures appearing in the tables will make clear the general tendencies, and will reflect the position and the organisation of agriculture in the countries under review.

It may be urged against the statistics established in this work, that they can only be published one or two years after the closing of the accounts under review. It is not however intended that they should be regarded as a single source of information ; if supplemented by other more recent statistical information they render possible forecasts relating to the year in course, and they may become of considerable value in the sphere of international agrarian policy.

The objection may be made that the total number and area of the farms coming under the survey of the Farm Accountancy Offices are not large enough to make the results really representative (1). This is readily admitted but on

(1) If  $N$  is any number whatever of observations, and if we take  $\frac{b-a}{n} = \Delta x$ , where  $b$  is the maximum and  $a$  the minimum of a certain observed value, and  $n$  is any number whatever, the  $N$  observations may be distributed over  $n$  classes, for each of which the observed values are

$$\leq (a + \Delta x) \ (a + 2 \Delta x) \ . \ . \ . \ (a + n \Delta x).$$

If  $y_1 \ y_2 \ . \ . \ . \ y_n$  represent the number of observations corresponding to each class, the approximate mean of the observed values is expressed by :

$$\mu = \frac{(a + \Delta x) y_1 + (a + 2 \Delta x) y_2 + \dots + (a + n \Delta x) y_n}{y_1 + y_2 + \dots + y_n}$$

taking into account the fact that the larger  $n$  is, the closer is the approximation. The preceding formula then becomes:  $\mu = a + \Delta x \frac{y_1 + 2 y_2 + \dots + n y_n}{N}$  from which it results that  $\mu$  does not vary if  $N$  is replaced by however small a fraction of  $N$ . Actually if we take  $N = m z$ ,

$$\mu = a + \frac{\Delta x}{z} \left( \frac{y_1}{m} + \frac{2 y_2}{m} + \dots + \frac{n y_n}{m} \right)$$

To obtain an approximate average of  $N$  observations, it is accordingly necessary and sufficient to consider in each class a number of observations respectively proportional to  $y_1 \ y_2 \ . \ . \ . \ y_n$ .

the other hand attention may be called to the fact that they are sufficiently representative to make the values so obtained a true reflection of the agricultural situation in the majority of the countries under consideration. The diagrams established by the use of the averages of 2 or 3 successive years are proof of this. The concurrence of the dynamic tendencies is striking even at first sight; and it may be at once affirmed that these tendencies are capable of being used as the basis of fruitful studies of a practical kind.

The number of farms coming under the survey of the Accountancy Offices is increasing; each year a certain number of those dealt with in the previous year fall out, but on the other hand new farms present themselves.

If the average of a large number of observations, collected on any principle whatever, be established, it is found that few of the individual results correspond to the average. But the differences follow each other with a certain regularity. To find the law, all differences are added together without taking the sign (positive or negative) into account; the total is then divided by  $\sqrt{n(n-1)}$ ,  $n$  being the number of observations. The quotient is multiplied by a constant, the Mitscherlich factor 0.845, and the "probable error", or "probable variation" ( $r$ ) is obtained (1). The frequency of the appearance of this last is governed by the GAUSS law, expressed by the symmetrical curve which bears his name.

Pauli (2) after Mitscherlich employed the formula :

$$r = \frac{\text{Sum of the differences } [\pm v]}{\sqrt{n(n-1)}} \times 0.845$$

to show that the calculations of net return and production costs are subjected to the law of probabilities. Pauli chose, among the accountancy results of 1909, a series of observations corresponding to the group of dairy farms in Switzerland.

(1) This formula has been established as follows :

$$\left. \begin{array}{l} \text{taking } t = \frac{[\Sigma]}{n} \\ \text{taking } m = \sqrt{\frac{[\Sigma^2]}{n}} \end{array} \right\} t : m = 1 : 1.2533 ; m = t. 1.2533$$

$t. 1.2533$  is an approximate value only of  $m$ ; but the calculation is more quickly made than with the exact formula  $\sqrt{\frac{[\Sigma^2]}{n}}$ .  $m : r = 1 : 0.6744898$ ; the probable error =  $0.6744898 \sqrt{\frac{[\Sigma^2]}{n}}$ . Replacing  $\sqrt{\frac{[\Sigma^2]}{n}}$  by  $\frac{[\Sigma^2]}{n} 1.2533$ , the following useful formula is obtained :

$$\frac{[\Sigma^2]}{n} 1.2533 \times 0.6744898 = \frac{[\Sigma^2]}{n} 0.845$$

as  $t. 1.2533$  is only an approximate value of  $m$ ,  $\frac{[\Sigma^2]}{n} \times 0.845$  is also only an approximate value of  $r$ , but it is sufficiently accurate for practical purposes.

(2) Produktionskostenberechnungen in bäuerlichen Betrieben, Thunen Archiv, 1913, Jena.

The following table shows the costs of production per 100 kg. of milk and the "probable variation" (r) :

FARMS	Serial Number of the farms	Average of 5 observations		Average of 10 observations		Average of 15 observations	
		Swiss francs	r	Swiss francs	r	Swiss francs	r
<i>Farms on which mixed forage crops are grown:</i>							
<i>(a) Receiving the skimmed milk in return:</i>							
Average of first 5 farms. .	(15-292)	17.34	± 2.70	17.46	± 1.77	17.86	± 2.43
"    5 following " . .	(296-426)	17.59	± 1.27				
"    5 " " . .	(511-603)	18.65	± 4.15	18.20	± 3.21	17.23	± 2.75
"    5 " " . .	(604-727)	17.74	± 2.76				
"    5 " " . .	(791-827)	18.05	± 3.42	16.97	± 2.93		
"    5 " " . .	(829-841)	15.89	± 2.84				
"    5 " " . .	(842-857)	19.22	± 3.99				
<i>(b) Not receiving skimmed milk in return:</i>							
Average of first 5 farms. .	(78-373)	18.03	± 1.66	17.95	± 2.77	18.06	± 2.31
"    5 following " . .	(391-432)	17.88	± 3.23				
"    5 " " . .	(457-774)	18.26	± 2.61	18.02	± 3.33		
"    5 " " . .	(731-838)	17.78	± 4.43				

When an average is taken on five farms, the *probable variations* of individual results show great differences. The case is the same if an average is based on 10 farms. It is only when a series of at least 15 individual results of farms of the same type is available that the *probable variations* balance out in a satisfactory manner, and that the average of at least 15 results coming from farms of similar type makes it possible to draw definitive conclusions on any one point and to apply them in practice.

When the groups are less homogeneous, when they cover the farms of the whole of a country and not merely the farms of a single system of production, a much greater number of farms are needed to obtain the most probable averages (or in other words those which show only very slight modification on the addition of the results of other farms).

The Accountancy Offices make this experiment every year. The Secretariate of the Swiss Peasants, at Brougg, in establishing the following table, has

shown, that when groups consist of at least 100 farms, the averages are no longer modified to any perceptible extent :

Number of farms	Net return in % of the assets in 1922	Household expenses per day of man's board in 1922
84 . . . . .	— 1.90	2.20
114 . . . . .	— 1.71	2.42
154 . . . . .	— 1.73	2.43
194 . . . . .	— 1.88	2.44
234 . . . . .	— 1.74	2.43
274 . . . . .	— 1.65	2.44
313 . . . . .	— 1.60	2.45
400 . . . . .	— 1.62	2.48

We have ourselves applied the experiment of Pauli to 75 large Polish farms of which the individual results for 1929-30 were available ; the following table shows the variations thus obtained :

$$\left( r = \frac{\text{sum of differences } [\pm v]}{\sqrt{n(n-1)}} \times 0.845 \right) :$$

	Gross Return per ha. (Average of 30 farms)	r	Gross Return per ha. (Average of 45 farms)	r	Gross Return per ha. (Average of 60 farms)	r
30 farms ( 1 to 30) . . . .	465.84	± 139.52	452.95 468.82 432.92	± 134.03	466.38 452.85	± 135.44 ± 135.62
30 " (16 to 45) . . . .	449.91	± 121.54		± 127.63		
30 " (31 to 60) . . . .	466.92	± 133.68		± 142.21		
30 " (46 to 75) . . . .	435.79	± 152.02				

The average of 60 individual results of the most diverse farms has to be taken to obtain the same *probable variation*.

It is thus necessary to take in Switzerland, at least, 100 farms out of 238,470, and in Poland 60 large farms out of 30,009, or in other words, 4 per 10,000 in Switzerland and 20 per 10,000 in Poland to obtain the most probable average. Now this figure is exceeded : in Switzerland we have accountancy results for 501 farms out of 238,470, or 21 per 10,000 ; in Poland for 76 large farms, or 25 per 10,000.

Let us assume that, to obtain the most probable averages, results must be available for at least 4 peasant farms per 10,000 and at least 20 large farms per 10,000, as being less numerous, and let us see what is obtained for each country,

taking the average of a table the values of which are only slightly modified from one year to another, *viz.*, the table of capital invested in agriculture.

It appears from this table that when the results are available of at least 3 to 4 peasant farms and of at least 10 to 20 large farms, per 10,000, the averages of the capital investments per hectare and expressed as percentage show a very slight variation only from one year to another. Whether an addition or a subtraction of other farms is effected, the average farm thus obtained preserves exactly the same physiognomy.

This amounts to saying that, although no farm is in all points similar to the farm most resembling it, the larger number of the extreme cases of disparity have been included under this total number of farms. The greater number of the individual results must be very close to the mean or average. In fact, if size classes of gross return are established, the following significant table is obtained for the 76 Polish large farms referred to above.

### *Size-classes of Gross Return*

(zlotys per ha).

	100	100 to 200	200 to 300	300 to 400	400 to 500	500 to 600	600 to 700	700 to 800	800 to 900	900 to 1000
Number of farms . . .	1	7	13	12	12	13	11	5	1	1
Total arable area in ha. .	258 —	5318.70	4201.40	7378.10	7750 —	7612.30	5379.20	2392 —	1425 —	635.30
Arable area in % of total.	0.61	12.56	9.92	17.42	18.30	17.97	12.70	5.65	3.36	1.50

The average gross return (arithmetical mean) is 447.13 zlotys per hectare.

In view of the preceding tables the following statement made by the Secretariate of the Swiss Peasants, at Brougg, may serve also as a statement of our own experience :

“ Although every year the investigations on profit earning capacity include a certain number of new farms while others drop out, the mean composition of the farms under review, provided that the number is sufficient, remains the same in the most diverse respects (area, degree of intensity of the farming, etc.). It is accordingly possible to establish sound comparisons, equally between the general average as between the averages of each group of farms. Every annual average pays the part of *relative average* of the whole of the country and may be compared with that of another years. It is in this way that the averages of the Secretariate enable an idea to be formed which is increasingly exact in respect of the true conditions of agriculture ”.

Hence it may be said that our averages, which are nearly all based on an adequate number of farms, will give an increasingly exact idea of the true conditions of European agriculture, and even of world agriculture, once the field of our invest-

FARMS	Number of farms			Number of farms included in the in %/1000 of the total farms of each country		
	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30

## (A) COUNTRIES FOR WHICH THE NUMBER OF FARMS

(a) <i>Peasant farms.</i>						
Netherlands . . . . .	1987	2201	2715	70	77	95
Denmark . . . . .	573	599	618	28	30	31
Germany . . . . .	1637	2289	2714	3	4	5
Switzerland . . . . .	500	504	501	21	21	21
Austria . . . . .	397	743	896	9	17	21
Poland . . . . .	804	855	793	2.4	3	2.4
Lithuania . . . . .	—	95	100	—	3	3
Latvia . . . . .	117	132	102	5	6	4
Estonia . . . . .	250	260	260	19	19	19
Finland . . . . .	414	474	524	17	19	21
Norway . . . . .	190	172	191	6	6	6
Sweden . . . . .	286	242	295	10	8	10
(b) <i>Large farms.</i>						
Denmark . . . . .	153	155	167	34	34	37
Germany . . . . .	656	691	806	37	39	45
Finland . . . . .	75	72	80	20	19	21
Sweden . . . . .	96	113	125	81	95	106
Czechoslovakia . . . . .	26	30	35	8	10	11

## (B) COUNTRIES FOR WHICH THE NUMBER OF FARMS IS NEARLY

(a) <i>Peasant farms.</i>						
Czechoslovakia . . . . .	221	228	202	1.4	1.4	1.3
Hungary . . . . .	34	—	104	—	—	—
(b) <i>Large farms.</i>						
Cambridge . . . . .	—	12	162	—	—	—

## (C) COUNTRIES FOR WHICH THE NUMBER OF FARMS

(a) <i>Peasant farms.</i>						
Bulgaria . . . . .	—	5	4	—	—	—
Rumania . . . . .	—	63	13	—	0.2	0.03



Capital invested in gold francs per ha.			Landlord's capital in % of capital invested			Tenant's capital in % of capital invested		
1927-28	1928-29	1929-30	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30

IS SUFFICIENT TO YIELD THE MOST PROBABLE AVERAGES.

—	—	—	—	—	—	—	—	—
3299.41	3247.96	3227.74	75.63	75.98	74.37	24.37	24.02	25.63
—	—	—	—	—	—	—	—	—
7048.73	7748.97	7645 —	77.58	86.18	76.56	22.42	23.82	23.44
1762.67	1646.34	1706.23	68.58	69.82	69.82	31.42	30.18	30.18
1814.02	2253.43	2272.79	83.69	85.54	85.91	16.31	14.46	14.09
—	1057.04	997.81	—	73.90	73.03	—	26.10	26.97
645.83	609.58	613.28	63.88	63.29	65.51	36.12	36.71	34.49
567.44	573.64	585.83	65.49	65.59	66.59	34.51	34.41	33.41
1155.29	1251.71	1296.17	75.31	75.69	76.10	24.69	24.31	23.90
5448.30	5446.07	5047.52	76.12	76.43	76.91	23.88	23.57	23.09
2209.12	2197.82	2426.29	67.85	66.59	68.88	32.15	33.11	31.12
2733.42	2670.66	2697.40	78.94	78.48	77.46	21.06	21.52	22.54
—	—	—	—	—	—	—	—	—
1108.79	1212.58	1236.32	75.68	76.51	76.76	24.32	23.49	23.24
2155.68	2152.16	2207.64	65.75	66.10	67.67	34.25	33.90	32.33
1909.58	1961.02	2188.32	66.14	65.20	67.77	33.86	34.80	32.23

SUFFICIENT TO YIELD THE MOST PROBABLE AVERAGES.

2456.97	2699.88	2883.42	70.44	71.78	72.29	29.56	28.22	27.71
2512.19	—	2614.51	82.20	—	83.84	17.80	—	16.16
—	2606.64	1913.36	—	65.02	67.57	—	34.98	32.43

IS INSUFFICIENT TO YIELD THE MOST PROBABLE AVERAGES.

—	2197.57	1777.48	—	83.12	76.30	—	16.86	23.70
—	756.12	2037.86	—	89.09	78.19	—	10.91	21.81

FARMS	Number of farms			Number of farms included in the in %/1000 of the total farms of each country		
	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30

## (A) SUB-GROUPS FOR WHICH THE NUMBER OF FARMS

(a) <i>Peasant Farms.</i>									
Austria . . . . .	}	Averages	I	—	122	124	—	—	—
		»	III	—	127	152	—	—	—
		»	IV	—	124	172	—	—	—
		»	V	—	105	113	—	—	—
Czechoslovakia . . . . .	}	»	I	—	33	31	—	—	—
		»	III	—	195	171	—	—	—
Sweden . . . . .	}	»	I	—	147	159	—	—	—
		»	III	—	95	136	—	—	—
Württemberg . . . . .		»	II	—	73	110	—	—	—
Switzerland . . . . .		»	II	—	90	136	—	—	—
(b) <i>Large Farms.</i>									
Denmark . . . . .		Averages	I	—	155	167	—	—	—
Finland . . . . .		»	I	—	72	80	—	—	—
Sweden . . . . .		»	III	—	113	124	—	—	—

## (B) SUB-GROUPS FOR WHICH THE NUMBER OF FARMS IS NEARLY

(b) <i>Large Farms.</i>								
Württemberg . . . . .	Averages	II	—	47	20	—	—	—
Czechoslovakia . . . . .	»	III	—	26	24	—	—	—
Switzerland . . . . .	»	IV	—	17	11	—	—	—

## (C) SUB-GROUPS FOR WHICH THE NUMBER OF FARMS IS

(a) <i>Peasant Farms.</i>							
Rumania . . . . . Averages III	—	33	13	—	—	—	—

Capital invested in gold francs per ha.			Landlord's capital in % of capital invested			Tenant's capital in % of capital invested		
1927-28	1928-29	1929-30	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30

IS SUFFICIENT TO YIELD THE MOST PROBABLE AVERAGES.

—	1270.29	1310.19	—	71.20	71.59	—	28.80	28.41
—	2263.98	2256.07	—	66.89	68.36	—	33.11	31.64
—	3141.98	3194.64	—	70.15	69.54	—	29.85	30.46
—	996.11	1007.16	—	74.06	73.74	—	25.94	26.26
—	2385.36	2364.69	—	69.95	69.79	—	30.05	30.21
—	2746.33	2980.37	—	72.01	72.67	—	27.99	27.33
—	2208.63	2237.77	—	66.50	68.39	—	33.50	31.61
—	2184.65	2573.01	—	66.69	69.22	—	33.31	30.78
—	2750.02	2545.85	—	71.17	70.89	—	28.83	29.11
—	7456 —	7442.53	—	76.50	75.58	—	23.50	24.42
—	2670.66	2697.40	—	78.48	77.46	—	21.52	22.54
—	1212.58	1236.32	—	76.51	76.76	—	23.49	23.24
—	2152.16	2207.64	—	66.10	67.67	—	33.90	32.33

SUFFICIENT TO YIELD THE MOST PROBABLE AVERAGES.

—	2193.53	2221.26	—	72.28	74.75	—	22.72	25.25
—	2040.62	2194.35	—	65.95	67.92	—	34.05	32.08
—	11077 —	11307.88	—	76.02	74.85	—	23.98	25.15

INSUFFICIENT TO YIELD THE MOST PROBABLE AVERAGES.

—	1266.33	2037.86	—	77.20	78.19	—	22.80	21.81
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igations is extended to the whole globe. Confirmation of this is found also in the table on which are inserted the percentage of the arable area of the farms included in our Survey in relation to the percentages of the cultivable area of all the farms of each of the countries under consideration, the totals being taken from the International Yearbook of Agricultural Statistics. The series so presented approach so closely as regards composition as almost to coincide. Actually in 1929-30, when the Scottish results were given in addition to those of Hertfordshire, the percentages of the area reserved to cereals are identical for the farms included in the Institute's Farm Accountancy publication and for all the farms of Great Britain, whereas in 1927-28 and 1928-29 the difference was considerable, as shown by the following figures :

	Area reserved to cereals in percentage of the total area	
	Farms included in Farm Accountancy Statistics	All farms of Great Britain
Great Britain		
1927-28 (not including the Scottish farms) . . . . .	68.09	45.62
1928-29 (not including the Scottish farms) . . . . .	56.51	45.16
1929-30 (including the Scottish farms) . . . . .	44.83	45.60

For Czechoslovakia and Finland the modifications taking place in 1929-30 in the percentage composition of the arable area in either country are shown equally by the figures of the two series.

	Area reserved to cereals in percentage of the total	
	Farms included in Farm Accountancy Statistics	All Farms of the country
Czechoslovakia		
1927 28 . . . . .	58.33	59.16
1928-29 . . . . .	58.84	60.66
1929-30 . . . . .	60.23	63.35
Finland		
1927-28 . . . . .	35.91	38.34
1928-29 . . . . .	34.93	38.42
1929-30 . . . . .	34.84	34.76

Both series of figures show clearly that the sowings, in 1929-30, increased in Czechoslovakia and have diminished in Finland.

Another fact may be quoted fully confirming the hypothesis. In 1930 as the imports of chemical fertilisers into Poland showed a considerable decline it was concluded that the farmers had reduced their purchases of fertilisers; our statistics based on farm accountancy results leave no doubt on this subject.

	Purchases of fertilisers		
	in zlotys per ha.	in % of cost of production	in % of gross return
Poland			
1927-28 (804 farms) . . . . .	22	3.78	3.75
1928-29 (855 » ) . . . . .	26	3.93	4.44
1929-30 (793 » ) . . . . .	21	3.28	4.21
1930-31 (739 » ) . . . . .	10	1.74	2.64

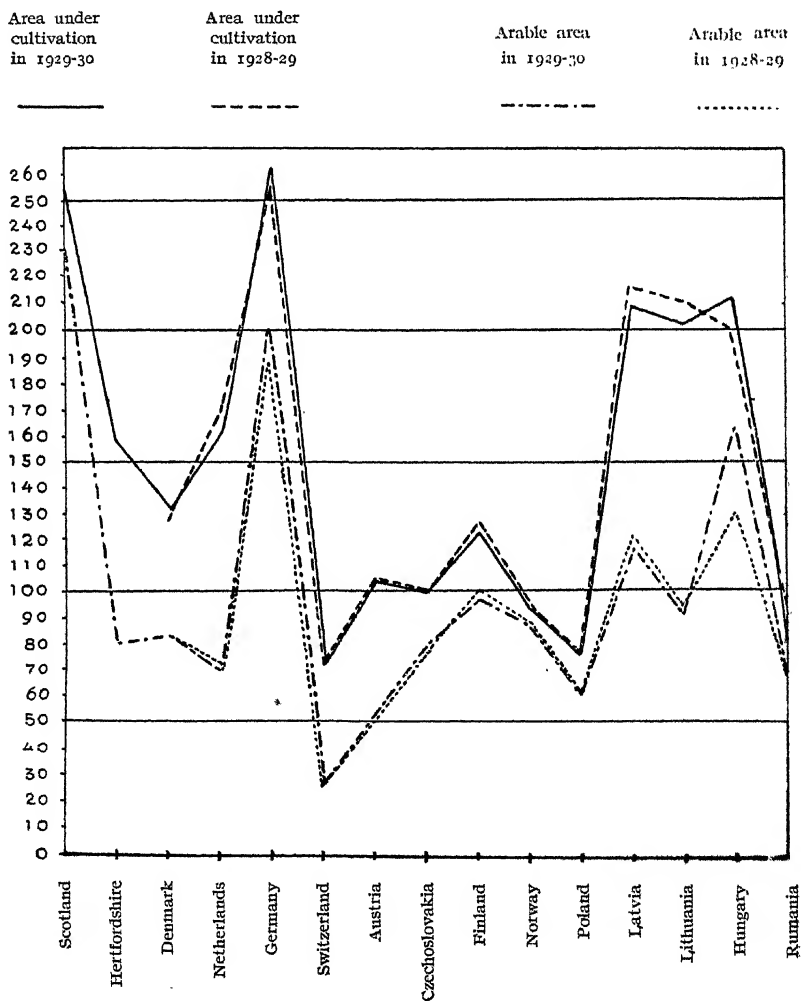
These statements carry conviction. The same may be said of the result of any study of the diagrams showing the average composition of the area and of capital invested during two or three successive years.

Although the number of farms coming under the survey of the Accountancy Offices of certain countries, for example the Danubian countries, are insufficient for the obtaining of reliable averages, it would not be desirable to omit the results supplied by those Offices. The Offices have been in existence for a few years only : the field of their investigations is gradually becoming enlarged, and the day is no doubt not far distant when the number of farms submitting their accounts will be sufficiently large for the average composition to come out, as in other countries, the same in the most diverse respects. For the present, the results of these farms may be used, with due reserve, for the study of certain special features presented by the farm undertaking in these countries, since it is admitted that these farms belong to a group sufficiently widely represented in the country, and are in consequence representative by selection.

These general considerations may here reach their conclusion ; but the reader's attention may be again called to the fact that in order to draw conclusions, without risk of error, from the study of the statistics submitted, there must be some knowledge of the conditions under which the figures have been obtained.

JOSEPH DESLARZES.

## DISTRIBUTION OF LANDS

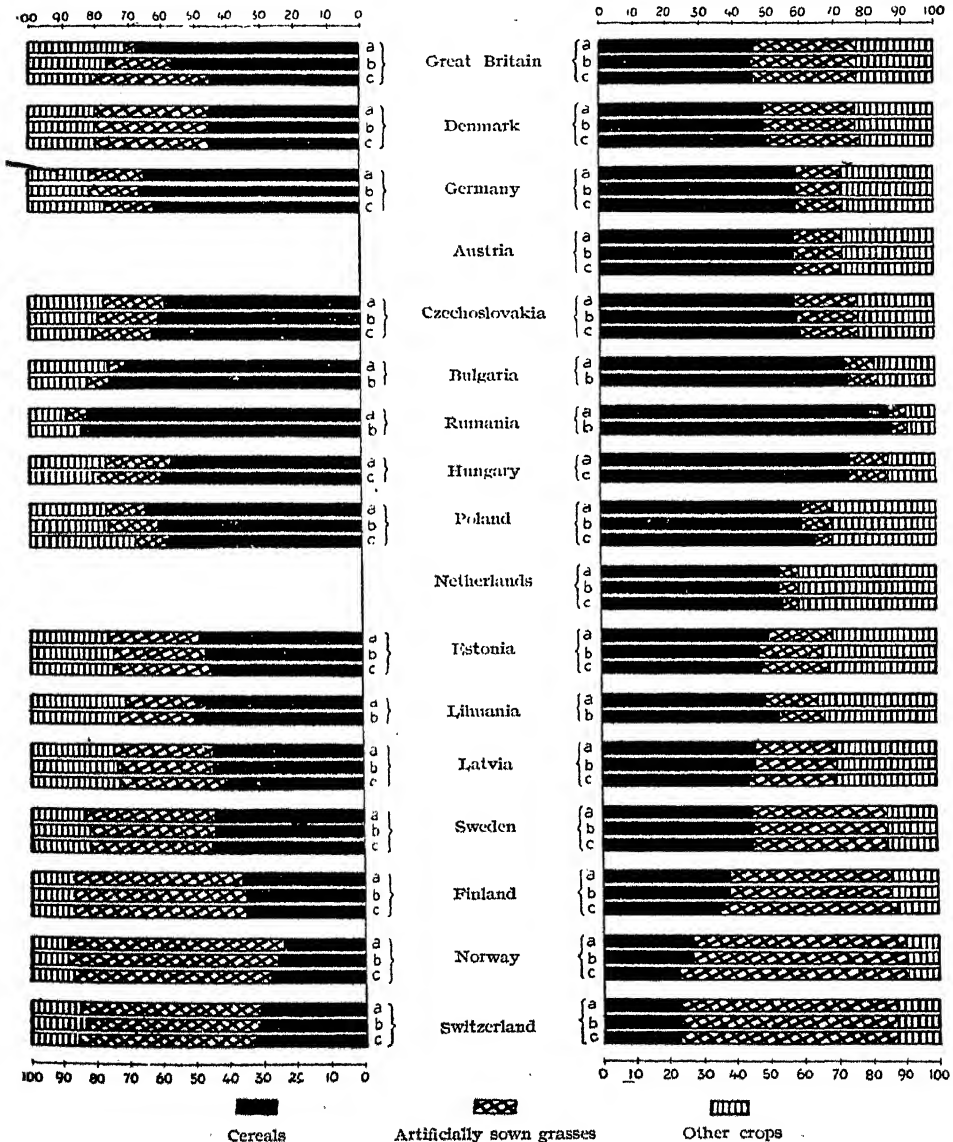


The area under cultivation of Czechoslovakia in 1929-30 is equal to 100.

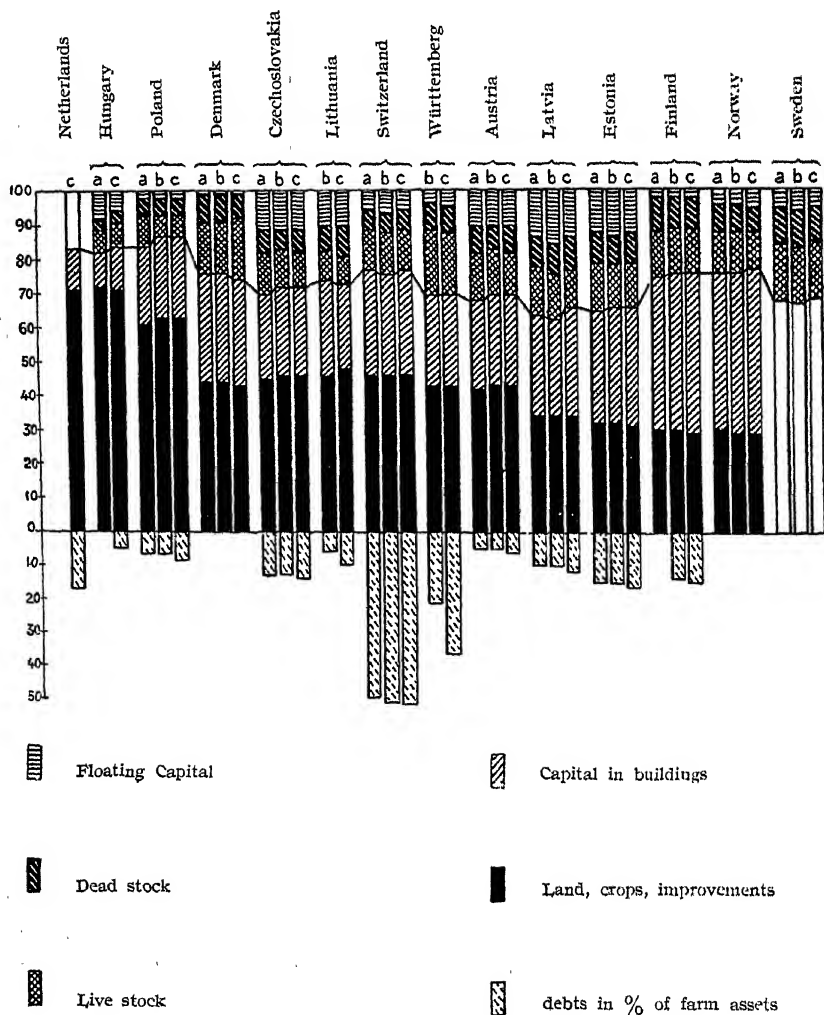
PERCENTAGES OF ARABLE LAND TAKEN FROM THE *INTERNATIONAL YEARBOOK OF AGRICULTURAL STATISTICS* AND AVERAGE PERCENTAGES OF THE ARABLE LAND OF THE FARMS INCLUDED IN *FARM ACCOUNTANCY STATISTICS*

Farms included in *Farm Accountancy Statistics*

All farms of the country



## PERCENTAGE COMPOSITION OF FARM ASSETS



a = 1927-28; b = 1928-29; c = 1929-30.



## CO-OPERATION

### Agricultural Co-operation in Lithuania.

#### I. — HISTORICAL SURVEY.

The co-operative movement in Lithuania dates from the second half of the nineteenth century, and the first organisation of a co-operative character was a consumers' society founded in 1869 at Vilnius by some State officials. The first savings and loan society was formed in 1871, and an agricultural society was founded at Kaunas about the same time by some large farmers. These societies, however, were organised, for the most part, by Russian officials or by large landed proprietors, and the mass of the Lithuanian population had no part in them. It was, in fact, only during the nineties of last century that the people of Lithuania began to take part in the co-operative movement, and in the first place in consumers' societies. Up to 1904 the number of these co-operative societies was quite small, and it began to increase, as did also the number of the co-operative credit societies, only after 1905, when the prohibitions affecting the Lithuanian press were suspended by the Russian Government, and the severity of the political regime became generally speaking relaxed in Russia. In 1908 a special society for the encouragement of co-operation was organised at Vilnius, the object of which was to diffuse the idea of co-operation to advise and assist societies in process of formation and to give information, etc., to societies already in existence. In 1911 a periodical, entitled "Bendrija", especially devoted to co-operation, began to appear. The development of the co-operative movement was however hampered before the war by the measures adopted by the former Russian authorities by which the societies were not permitted to group themselves in unions: and it was only at the beginning of the war that permission was granted, at Šiauliai, for the organisation of a regional union of co-operative consumers' societies. The war however prevented the actual functioning of this Federation.

On the eve of the war there were, in round figures, on the present territory of Lithuania, apart from the territory of Memel, 200 consumers' co-operative societies, 100 co-operative credit societies, and 80 agricultural co-operative societies. The consumers' societies were instituted for the most part in the small towns; the majority of their members were cultivators to whom the societies supplied, so far as possible, requisites of all kinds. The agricultural co-operative societies were for the most part farming societies the main object of which was to encourage the development of agriculture. The most important of these were those of the large farmers. Among the agricultural societies founded by the small or family farmers, the "Žagre" (or The Ploughshare), founded in 1907 at Mariampolė, should be regarded as one of the most important of the agricultural and trading co-operative societies of the pre-war period. In 1913 there was a membership of 1,095 members, with 7 entrepôts and 20 warehouses; in the same year sales of commodities amounted to 300,000 roubles or 150,000

dollars. Another large agricultural society "Mariampolės Ūkininkų Draugovė" had in 1913 as many as 22 branches. Its main object was the encouragement of technical progress in farming; its trading operations were of small extent. It should be added that in 1912-14, several co-operative dairies, worked by hand, were established.

In the course of the European war Lithuania was laid waste, and nearly all the property of the co-operative societies, land, buildings, equipment, etc. was destroyed. Some consumers' societies only were able, during the German occupation, to carry on a much reduced activity.

With the proclamation of the independence of Lithuania in 1918 a new chapter in the history of Lithuanian co-operation opened.

The provisional Government devoted attention to co-operation, and in 1919 a special Department of co-operation was organised under the Ministry of Commerce and Industry, the Ministry itself being later incorporated in the Ministry of Finances. The purpose of this Department was to establish conditions favourable to the development of co-operation, by drafting legislative measures on co-operative societies, by publishing model rules, etc. On 30 January 1919, a law was promulgated on the co-operative societies and their Unions by the terms of which all that was required for the constitution of a co-operative society was simple registration whereas before the war a special permit had always been necessary. Freedom to establish unions was also confirmed by the law. After the enactment of this measure the development of the co-operative movement went on very rapidly. The first to be organised were the consumers' societies, a fact which is explained by the scarcity and dearness of commodities at that time in Lithuania. After 1922, that is, after the introduction of a stable currency, rural co-operative credit societies, agricultural societies and co-operative dairies began to be organised.

Up to 1923 conditions were not favourable to the development of agricultural co-operation, as the currency had been liable to perpetual fluctuations; up to the time of the introduction of the stabilised national currency ("lita" = 1/10 gold dollar) in October 1922, German money was circulating in Lithuania. The sale of agricultural products had also been an easy matter. In 1923 the situation changed: Lithuanian agriculture was by that time no longer suffering from war conditions, and considerable quantities of exportable agricultural products began to depress the home market, while supplies of foreign products were constantly increasing on external markets. Lithuanian farmers were thus compelled to organise the co-operative sale of their products and to give attention to the improvement of quality in order to secure an external market and to sustain the competition of other exporting countries. To effect such ends, agricultural co-operative societies, co-operative dairies, etc., were founded.

It should be noted that the agrarian reform, in consequence of which the number of small farmers in Lithuania became larger, has not been without influence on the rapid development of agricultural co-operation; it is, in fact, the small farmers who seem to have the more aptitude for co-operation, which is, as the Lithuanian small farmer is well aware, the essential condition of the material and moral wellbeing of any individual.

## II. — THE LEGAL BASIS OF LITHUANIAN CO-OPERATIVE SOCIETIES.

With the exception of the Territory of Memel, where the German law of 1889 on co-operative societies is still in force, the co-operative societies in Lithuania are regulated by the law of 30 January 1919, to which on 12 November 1929 an amendment was made relating to the liability of members, and an addition in respect of the supervision and inspection of societies and their unions.

By this law the name of co-operative society designates " a society with a variable membership and share capital, carrying out activities under a special name and with the object of increasing the material and moral welfare of its members by the organisation of the work jointly of its associates and of its various economic institutions ". The formation of a co-operative society does not require a special authorisation ; it is enough to forward the rules of the society to the Inspection of Establishments and undertakings submitting accounts for public audit at the Ministry of Finances, for examination and subsequent registration. From the date of registration of the rules the society becomes a corporate body. Following registration the founders summon a meeting which constitutes the society and proceeds to the election of the administrative organs.

The management of the business of the co-operative society is in the hands of the general meeting, of the Administrative Council and of the Supervisory Council, should this last be provided for in the rules. Each member of the society has one vote at the general meeting, even though he holds more than one share. This vote cannot be transferred by him to another person. The Administrative Council must, in the course of the four months following the end of the financial year, summon the general meeting to discuss and approve the activity of the society, its statement of receipts and expenditure, and its profit and loss account. The accounts and the position as regards receipts and expenditure of the society must be examined by the audit Committee elected by the general meeting, and the result of this examination must be communicated subsequently to the meeting. This same Committee of audit must also examine into the management of the property of the society, and the work carried out by it, at least once a year ; for this purpose it may call upon the Administrative Council and the Supervisory Council to supply all the information necessary. It may be noted that the Inspection of establishments and undertakings controls, through its inspectors, the activity of co-operative societies and ascertains if their activities are being carried on in accordance with their rules.

The liability of the members in respect of the liabilities of the society does not exceed the amount of their shares, or, in addition, a fixed sum as stated in the rules. By the terms of the law a member cannot withdraw from the society before the last day of the financial year, and then only on condition of having given notice three months in advance. Members withdrawing are liable, jointly and severally with the remaining members, for the liabilities of the society undertaken before their withdrawal, for one year dating from the day of their resignation, unless a longer period is prescribed in the rules. To meet any losses that may be experienced by the society, a reserve fund must be formed, into which at least one fourth of the annual profit must be paid ; these first charges

on the net profit in favour of the reserve funds are made up to the value of the share capital; the members' dividend may not exceed 8 per cent. of the net profit.

Certain fiscal exemptions are granted in Lithuania to co-operative societies and their unions. All co-operative credit societies and all co-operative insurance societies as well as co-operative labour societies and consumers' societies, provided the share capital does not attain 50,000 *litas*, are exempt from license fees in virtue of former Russian laws still in force. Up to 1930 the Lithuanian law relating to taxes on incomes from commerce, manufacture, banking and trades, exempted from the payment of these taxes unions of co-operative societies of all types, all co-operative credit and farming societies, and all consumers' societies provided that the share capital in any case was less than 50,000 *litas*, as well as all co-operative societies doing business only with their own members, even if possessing share capital in excess of 50,000 *litas*. Since 1931 exemption from payment of the income tax has been granted to co-operative societies and unions only in cases where the share capital was less than 50,000 *litas*; societies and unions possessing share capital of 50,000 *litas* or more are not exempted, with the exception of those limiting their activities to their own members; those not exempted are liable to a tax amounting to 8 per cent. of the net profit. Other undertakings and firms which are under the obligation of communicating their statements of receipts and expenditure to the Ministry of Finance must pay 16 per cent. of the net profit. Some classes of co-operative societies further benefit by certain exemptions in respect of payment of stamp duties.

### III. — CO-OPERATIVE AGRICULTURAL SOCIETIES (PROPERLY SO CALLED), CO-OPERATIVE MARKETING SOCIETIES AND SOCIETIES FOR THE SUPPLY OF REQUISITES.

As already stated (see Heading I) the first societies to be organised in independent Lithuania were the consumers' societies. Nearly all these societies adopted the model rules, published in 1919 by the Department of Co-operation. By the terms of these rules, the object of consumers' societies is not merely "to supply their members with the various consumption commodities and requisites for their work", but also "to assist members in organising the sale of their products and in other ways". As the greater number of the members of these consumers' societies are small or family farmers, the supplies required are not merely articles for their own consumption but also farm requisites, fertilisers, seeds, concentrated feeding stuffs, farm implements, etc. In addition the society buys some part of the product of their labour. It will thus be seen that before the appearance in 1923, of the farming societies, the co-operative supply of farm requisites and, in part, the joint sale of farm products, were in the hands of the consumers' societies and their unions. The most important among these was the "Lietuvos Kooperacijos Bendrovių Sąjunga" — the Union of Lithuanian Co-operative Societies — founded in 1920.

Organisation of the farming societies began definitely in 1923. A large number of these did not regard themselves as trading societies, and were registered, in virtue of the law relating to associations not organised for profit, at the

office of the competent District head. By the terms of the rules, the purpose of a farming society is to encourage the technical progress of agriculture by diffusing information on the scientific methods of agricultural production, by organising lectures and exhibitions, etc. Besides these purely educational purposes, the object of these societies is to assist their members and other farmers in the purchase of farm machines and implements, breeding animals, seeds and fertilisers, in making suitable installations for the grading of cereals, drying of fruit, service stations, etc. The financial structure of these societies has not been in any way properly adapted to all these purposes, and consequently when trading operations were entered upon, the unsuitability of the societies became recognised and it became necessary to give them a structure resembling that of the consumers' co-operative societies. The agricultural trading societies purchased from farmers the product of their farming and sold them fertilisers, and farm machines and implements. Some of them possessed warehouses similar to those belonging to the consumers' societies. In many localities, these societies were working side by side with the consumers' societies, which were, in part, carrying on identical trading operations. The resulting overlapping in the sphere of co-operative purchase of farm requisites retarded the development of co-operative agricultural trading societies. In order to eliminate this overlapping, the re-organisation of the two types of societies was undertaken in 1931. Amalgamation was effected of the consumers' societies and the farming societies working in the same localities and carrying out in part identical trading operations. The other organisations were left standing but under the new designation of "co-operative agricultural societies" (*žemes ūkio kooperatyvas*) in place of "farming societies" and consumers' societies.

The Union of the co-operative consumers' societies – the "Lietuvos Kooperacijos Bendrovių Sąjunga" – amalgamated with the Union of Lithuanian Co-operative Agricultural Societies – "Lietuvos Žemes Ūkio Kooperatyvų Sąjunga". The new Union took the name of "Lietuvos Žemes Ūkio Kooperatyvų Sąjunga", abbreviated to "Lietūkis". The members of the Union of Co-operative Consumers' Societies were affiliated with the "Lietūkis".

At the present time the "Lietūkis", founded in 1923, is the only union of co-operative societies for purchase and sale. Up to 1929, the farming societies were grouped in two Unions, the Farmers' Union or "Lietuvos Ūkininkų Sąjunga" (from 1927 onwards the Union of Farmers' Co-operative Societies or "Lietuvos Ūkininkų Kooperatyvų Sąjunga") and the Union of Lithuania Agricultural Co-operative Societies or "Lietuvos Žemes Ūkio Kooperatyvų Sąjunga". This latter Union is a purely co-operative organisation, whereas the "Lietuvos Ūkininkų Sąjunga" is a political group which until 1927 also carried on an economic activity in the sphere of co-operation. In 1927, the former Union transferred its economic activity to an organisation newly formed under the designation "Lietuvos Ūkininkų Kooperatyvų Sąjunga" (Union of Co-operative Societies of Lithuanian Farmers). Up to 1926, the year of the foundation of the Chamber of Agriculture, a body made responsible by the Government for the development of agriculture, the two central unions gave their attention, besides trading in farm requisites and farm products, to the encouragement of

the technical progress and the development of agriculture. Their experts delivered lectures on agricultural questions, gave advice to cultivators on the use of mineral fertilisers, on the improvement of live stock, etc., supervised and directed trial plots on the farms of cultivators, etc. At the same time the organisation of co-operative dairies was actively carried out by the Unions, with the result that these latter included, from the first, not only the agricultural societies but also the co-operative dairying societies. It proved in practice that the grouping of the dairies, as special types of co-operative society, with the unions of farming societies did not give good results. For this reason the dairying societies were detached in 1926 from their respective central organisations, and became independent institutions grouped in a Union of Co-operative Dairies. In this way since 1927, the Union of Lithuanian Agricultural Co-operative Societies and the Union of Co-operative Societies of Lithuanian Farmers have become exclusively Unions of Co-operative Societies for Purchase and Sale. In view of the fact that the activity of these two unions extended in both cases over the whole of Lithuania, the resulting competition between them had a prejudicial effect on the development of the co-operative agricultural trading societies. Accordingly the Government in 1926 initiated measures with the object of remedying this drawback. In 1929, the Union of Co-operative Societies of Lithuanian Farmers was forced to cease working, and from that time the Union of Lithuanian Co-operative Agricultural Societies (known as "*Lietūkis*") is the only Union of co-operative agricultural societies. In 1931, as previously stated, the Union of Co-operative Consumers' Societies became associated with the "*Lietūkis*".

At the present time the *Lietūkis* and the societies grouped under it supply farmers with tools, farm machines, fertilisers, seeds, concentrated feeds, household wares, and in a word all requirements. On the other hand the *Lietūkis* and the grouped societies buy from the farmers for resale cereals, pulse, clover seeds, linseed, fruits, etc. (For co-operative trading in eggs see under Heading IV). The *Lietūkis* has leased from the Ministry of Agriculture two elevators, one at Kaunas and one at Šiauliai, which enables it to supply cereals to the army and to export them. In the localities where co-operative agricultural societies are functioning, the *Lietūkis* does not undertake trading operations, while on the other hand where no such societies are in existence it opens entrepôts and warehouses and places itself in direct commercial relations with the farmers in the neighbourhood. The larger co-operative societies also often maintain branches and warehouses. At the present time it is open to any cultivator to enter into relations with a co-operative agricultural society for purchase and sale.

It should be added that the *Lietūkis* maintains certain factories for the preparation of flax fibre; to these the growers in the neighbourhood or even at some distance bring their flax to have it treated by improved methods. In addition, the *Lietūkis* has leased a large mill with the view to providing its members with flour and bran ground from their own grain or to selling these products to other parties. Since the beginning of 1933 the *Lietūkis* has instituted with the "*Pienocentras*" (see Heading IV) and the "*Maistas*" (see Heading VI) a share company for the working of a soap factory.

An important part is taken by the *Lietūkis* in the trade in cereals, fertilisers, farm machines, coal, cement, sheet iron and sugar. Nearly the whole of the cereals bought by the Army Commissariat is supplied by the *Lietūkis*. In 1931 and 1932, the quantity of wheat, rye and oats exported by the *Lietūkis* was 90 per cent. of the aggregate export of these products during the years in question. In 1931 the turnover resulting from the sale of chemical fertilisers amounted to more than 50 per cent. of the aggregate turnover relating to the same article throughout the country; in the case of farm machines more than 50 per cent. of the business in 1931 was done by the *Lietūkis*. In 1932 commodities were sold by the *Lietūkis* to a total value of 28.85 million *litas*, including foodstuffs for 18.49 million, fertilisers for 5.39, and farm machines for 0.79 million *litas*.

The financial position of the *Lietūkis* is, in spite of the crisis, quite satisfactory. This will appear from the following table in respect of the main items shown on the balance sheet for 1931 and 1932 (millions of *litas*) :

	31-XII-1931	31-XII-1932
Owned capital of <i>Lietūkis</i> . . . . .	0.99	1.15
Stocks in store . . . . .	3.44	4.25
Due to Creditors . . . . .	5.60	5.29
Due from Debtors . . . . .	1.99	1.53
Net profit . . . . .	0.13	0.05
Balance sheet total . . . . .	13.48	12.93
(Number of members . . . . .	114	138)

The membership of the co-operative agricultural societies constituting the *Lietūkis* is almost entirely confined to small farmers and owners of medium sized farms. The large farmers have organised an agricultural trading society with headquarters at Kaunas. The capital of this society amounted at the end of 1931 to 552,021 *litas*; and in the same year its turnover was 479,839 *litas*.

Up to 1932 there was in active working in the Territory of Memel a co-operative society for purchase and sale with 164 members and a turnover of 3.5 million *litas* in 1931. In 1932 this society amalgamated with the *Raiffeisen-Handelsgesellschaft*.

#### IV. — CO-OPERATIVE DAIRIES.

As already stated the organisation of co-operative dairies was begun in 1923. The natural and economic conditions, for example, the preponderance of small and medium-sized farms, mainly due to the agrarian reform, are especially favourable to the development of live stock breeding and with it to that of the dairying industry in Lithuania. The most serious obstacle encountered in the organisation of the first co-operative dairies was the want of capital, the result of the Russian and German inflations, and in consequence the State was obliged to provide financial assistance. The number of the co-operative dairies quickly rose from 20 in 1924 to 88 in 1925 and in 1926 to 196 including 82 steam dairies. It would have required too large capital sums to extend the network of co-operative dairies and to arrange for the delivery of milk to the very distant dairies,

and hence from 1927 installations for cream separation have been established, where the cream is separated and forwarded to the dairies for transformation into butter. As these establishments had no equipment other than the separators, their installation did not press heavily on the farmers' budget. They belong either to the dairies which undertake to work them, or to societies which make contracts with neighbouring dairies for the delivery of the cream. The number of these separator centres rose rapidly from 53 in 1927 to 400 in 1929 and to 1868 in 1932. In 1932 there were in Lithuania 363 co-operative dairies, including three in the Territory of Memel. In addition to the co-operative dairies, about 70 private dairies are working in Lithuania, nearly 40 of which are in the Territory of Memel. These are engaged almost exclusively in the manufacture of cheese.

### *Organisation and Activity of Co-operative Dairies.*

The capital required for the construction of buildings and purchase of machinery is obtained by borrowing from the Land Bank; in addition, the co-operative dairies which conform to the rules established by the Chamber of Agriculture obtain a subsidy. These subsidies are small in amount but are of great importance to these dairy societies as increasing their solvency. Members of the society are liable in respect of the liabilities of the society for a fixed sum per head of dairy cows the milk of which is delivered to the dairy. At the time of admission the members are expected to pay registration fees and a certain sum per cow. In addition every member undertakes to pay a supplementary sum per dairy cow, to cover losses in the event of the financial resources of the society not being sufficient to pay the debts. Members undertake to deliver their entire milk production to the co-operative dairy, with the exception of the quantity required for their own consumption. Non-members' milk is also taken by the co-operative dairies. Suppliers deliver milk themselves to the dairy or to the separating establishment and take back the skimmed milk. Payment is made each month and calculated according to the content in butterfat of the milk, which is determined, as a rule, once a fortnight. Members are paid at a higher rate than non-members. In the majority of cases the skimmed milk is returned free of charge to the suppliers.

The management of the dairy society is in the hands of the Administrative Council the members of which frequently receive a fee, especially if living at some distance from the headquarters of the society. The accounts are usually kept by a paid accountant. The technical staff of the co-operative dairies include a manager; the larger dairies also engage an assistant manager and a certain number of workpeople. The engagement of staff rests with the Administrative Council. The dairy manager receives a fixed salary; he also receives free lodging, light, heating and dairy produce; in many cases he also receives a premium per kilo of first quality butter produced.

The Lithuanian co-operative dairies are almost exclusively engaged in the manufacture of butter, for which is employed about equally either the cream supplied by the separating centres or the milk supplied directly to the dairy. The majority of the steam driven dairies have an average production of 6,000



to 8,000 kgs. of milk per day. Nearly all are provided with the most modern machinery imported from Denmark, Sweden or Germany, with artesian wells, and ice-boxes, making practicable the manufacture of first quality butter. According to figures supplied by the "Pienocentras" Union (see later) the number of suppliers, including non-members, of the 263 co-operative dairies in working and of the 1,868 separating centres, in 1932 was 81,745 with 254,717 dairy cows, or more than 25 per cent. of the farms of Lithuania. The quantity of milk supplied to all the dairies and separating centres in 1932 was 250.94 million kgs including 163.25 million kg. to the separating centres. With this milk 10.29 million kg. of butter was manufactured. the average quantity of milk handled in 1932 by the steam dairies was 1,340,000 kg. and by the ordinary dairies 431,000 kg. The development of the co-operative dairies is shown in the following table :

	1927	1928	1929	1930	1931	1932
Number of milk suppliers per dairy . . . . .	39	54	116	221	262	310
Number of cows per dairy . .	135	181	369	654	794	968
Average quantity of milk supplied by a supplier (kg.).	2,172	2,951	2,463	2,590	2,755	3,064

The reduction in the quantity of milk per supplier in 1929 is due to the dearth of fodders consequent on the poor harvest of 1928.

Costs of production per kg. of butter vary naturally according to the quantity of milk handled. For example, in 1931, for the steam power dairies handling from 800,000 to 900,000 kgs. of milk, the costs amounted to 1.01 *litas* per kg. of butter produced, for dairies having handled from 1 to 1.2 million kgs., to 0.81 *litas*, and for those which had handled from 1.8 to 2 million kgs. — to 0.77 *litas*. In view of the drop in prices of butter in these last years (practically all the butter made in the co-operative dairies being exported) the dairy societies have taken all possible means to reduce costs of production; the stipends of the members of the Administrative Council and the wages of employees have been reduced; milk suppliers transport the butter themselves to the railway station, and the cream from the separating centre to the dairy, fetch the ice themselves for the ice-safes, etc. Moreover, dairies taking only small quantities of milk join with those among their neighbours which receive larger quantities and have improved equipment for the manufacture of butter; sometimes these dairies effect complete amalgamation, sometimes they amalgamate only for the purpose of butter making.

At the present time the dairy societies operating in Lithuania are grouped in a single Union only — the Central Union of Dairy Societies of Lithuania (*Centralinė Lietuvos Pieno Perdirbimo Bendrovių Sąjunga*, abbreviated into "Pienocentras"). As previously stated (see Heading III) the dairy societies had been organised by the Union of Lithuanian Co-operative Agricultural Societies, and by the Farmers' Union. At the beginning of 1926 the dairy societies of the Farmers' Union separated from the Union and organised the "Lietuvos Pieno Perdirbimo Bendrovių Sąjunga", or Union of the co-operative dairy societies of

Lithuania. At the end of the same year the dairy section of the Union of Lithuanian Co-operative Agricultural Societies also withdrew from the Union of which it was an integral part and became an independent institution under the designation of "Centralinė Lietuvos Pieno Perdirbimo Bendrovių Sąjunga", abbreviated as "Pienocentras". The co-existence of these two Unions hindered the development of dairy co-operation, since both were in active operation over the whole of Lithuania. From 1926 steps were taken by the Government to remedy this overlapping. In 1928, the Union of Co-operative Dairy Societies of Lithuania was obliged to suspend operations; the dairy societies which had been grouped under it joined the Central Union of Co-operative Dairy Societies of Lithuania, or the "Pienocentras".

The *Pienocentras* establishes co-operative dairies in suitable places, distributes to the member societies machines, small casks, parchment paper, salt, etc. The technical instructors of the Central Union prepare plans and estimates of dairies to be established, its fitters set up the new machinery as required and examine and repair machinery in working. Its advisors in dairying visit the dairies and instruct the managers on technical points; the work of sinking the artesian wells is supervised by the Union's experts, and its accountancy advisers visit the dairies to give assistance in organisation and book-keeping.

In addition the *Pienocentras* organises courses for the managers of the separating centres, and gives encouragement to the periodicals etc. of the dairy industry. The most important function of the *Pienocentras* is the marketing of the butter manufactured by the member dairy societies, alike on the export and the home market. Several warehouses are maintained by the Union at Kaunas and at Memel for the sale of dairy products. Pasteurised milk is also supplied to the inhabitants of the provisional capital of Lithuania. Since a very small proportion only of the butter manufactured by the co-operative dairies is consumed in the country, the most important function of *Pienocentras* is to find markets abroad for the Lithuanian butter. It may be noted that prior to the introduction of State inspection, i. e., up to 1 November 1927, inspection of butter for export was carried out by the *Pienocentras* itself. The Union has in fact contributed largely, thanks to the activity and initiative of the members of its Administrative Council, to the rapid introduction of butter inspection by the State as well as to the prompt construction of modern cold storage plant in the port of Memel, through which all butter exported is shipped. The establishment in 1932 of a station for research work in regard to the appearance of defects or deterioration in butter is equally due to the initiative of the Administrative Council of the *Pienocentras*.

The development of the export of butter by the *Pienocentras* is shown in the following table:

	1927	1928	1929	1930	1931	1932
Quantity exported in metric tons . . . . .	551	1375	2810	6027	7461	9281
Quantity exported as percentage of all Lithuanian butter exported % . . .	27	59	75	89	94	96

From the above figures it is clear that there has been a steadily increasing export of butter by the *Pienocentras* and that this Union is becoming practically the sole exporter of Lithuanian butter. It may be noted that the progress, in spite of the crisis, of this industry in Lithuania is to be ascribed to the centralisation of the co-operative production and exportation of Lithuanian butter in the hands of a single Union.

The financial position of the *Pienocentras* may be ascertained from the examination of the most important items of the balance sheet (expressed in millions of *litas*):

	1 January 1931	1 January 1932	1 January 1932
Owned capital . . . . .	0.56	1.35	1.69
Due to creditors . . . . .	4.32	2.12	2.82
Due from debtors . . . . .	2.77	3.63	2.40
Net Profit . . . . .	0.15	0.19	0.12
Balance-sheet total . . . .	6.09	7.68	7.83

Since 1929 the *Pienocentras* has also exported eggs. During the years 1923-26, the co-operative export of eggs was effected by the regional Union of co-operative agricultural societies known as "Gamintojas" at Šiauliai. Eggs were delivered by 85 co-operative societies to the grading centres of that Union, which exported 2,655 thousand eggs in 1924, 3,725 thousand in 1925, and 1,157 thousand in 1926. In consequence of the want of experience of its managers, of the beginning of the price decline in 1926 on the world market, and for other reasons the "Gamintojas" was obliged to suspend, in 1926, this branch of its activities. In the same year it became associated with the *Lietūkis*. In 1929 the *Pienocentras* proceeded to organise the co-operative trade in eggs. It is not necessary to engage special employees for collection of eggs; the farmers themselves can collect their eggs at the same time as their milk. Subsequent collection is carried out both by the agricultural co-operative societies and the consumers' co-operative societies. From the collecting centres, eggs are transported to the nearest grading centres where final grading and packing is effected. The *Pienocentras* effects the sale of eggs abroad or in its own warehouses of dairy products. The development of the trade in eggs through the *Pienocentras* is illustrated by the following figures:

	1929	1931	1932
Number of societies (acting as collecting centres) . . . . .	47	130	110
Number of eggs purchased (in thousands) . . . . .	485	5615	9800
Quantity of eggs exported (in thousands) . . . . .	360	4815	8760

In 1932 the figure representing the egg export of the *Pienocentras* formed nearly 20 per cent. of the total export figure of eggs from Lithuania during the year. In spite of the crisis and in spite of the decrease in this latter figure the *Pienocentras* was able in 1932 to increase its exports by 82 per cent. as compared with 1931 and to occupy the leading place among exporters of Lithuanian eggs.

## V. — RURAL CO-OPERATIVE CREDIT SOCIETIES.

For the first years of the revival of the Lithuanian State, it proved necessary to reorganise the whole credit system completely, as the capital of the formerly existing credit societies had been dissipated during the war in Russia or had disappeared during the German inflation. The confidence of the public in this type of co-operative societies had been shaken by the depreciation of the deposits which had been placed with these societies. Moreover the continual devaluation of the German currency introduced into the country by the authorities of the occupation tended to prevent persons who had money to invest from placing it in co-operative credit establishments. Finally during the first years that followed the proclamation of Lithuanian independence, the fact that the existence of the State itself was in danger, was also very far from favourable to the development of this type of co-operative societies. During the period of inflation, too, the farmers did not require credit. The introduction in October 1922 of a stabilised currency — the Litas — removed the most important of these obstacles to the development of co-operative credit. But as a consequence of the depreciation of the Russian and German currencies the financial resources of the country considerably diminished, while the possibility of obtaining foreign credits was nil, on account of the unstable political situation of Lithuania at that time. The shortage of working capital made itself felt, and the necessity of forming co-operative credit societies was recognised by all, and especially by the farmers. It was found, on forming the societies, that there were numerous applications for loans and very few deposits made. The Government was not at the time in a position to place funds at the disposal of the societies for the formation of capital. To meet these difficulties, at least in part, the members were themselves obliged to constitute the resources immediately required for the society and accordingly they paid up their shares on enrolment. The co-operative credit societies also obtained advances from the Lithuanian Bank of Co-operation and from the Central Bank of the Farmers' Union (the Farmers' Central Bank). As soon as the societies began to make loans to their members, deposits were immediately made, and the societies were then in a position to apply for advances to the Bank of Issue, to the savings banks, and, later, to the Land Mortgage Bank.

Up to 1927 the co-operative credit societies were constituted in accordance with model rules prepared by the Inspection of Credit Institutions and Co-operative Societies at the Ministry of Finance, which since 1932 has become the Inspection of Establishments and Undertakings presenting accounts for public audit. Provisions was made in the rules, in addition to the granting of credit to members, for trading operations, such as supply of fertilisers, and activities meeting the moral and social needs of the members. Each member is expected to pay up one share, on an average 25 *litas*, on his enrolment, and to undertake a liability up to double the total of the credit opened for him. The co-operative credit societies accept deposits from any quarter, but only members can obtain loans. Loans are granted for a period not exceeding 18 months and on condition of being utilised for the purposes indicated by the borrower. The rural co-oper-

ative credit societies make loans against the deposit of securities. Recovery of loans not paid on expiry is effected by the municipal authorities of the communes or by the police according to a very simple form of procedure, in virtue of a former Russian law still in force.

In 1927, and on the initiative of the Ministry of Agriculture, a beginning was made with the organisation of agricultural credit banks, called "communal". These banks differ from the co-operative credit banks in the following respects: they are prohibited by their rules from undertaking trading operations and also from any activities for the non-material interests of their members, for example, from founding libraries, making grants to periodicals, etc. The activity of each bank is limited to the commune in which it is established; membership is open to the farmers of the commune holding more than 2 hectares of land; one member of the Administrative Council and one substitute member must be elected from among the members of the agricultural council or their substitutes.

In connection with the formation of "communal" banks, and with the endeavours of the Government to strengthen the financial activity of the rural co-operative credit societies, there were issued in 1928 by the Council of Ministers "Regulations relating to the formation of foundation capital of agricultural co-operative credit societies". In virtue of these regulations, advances are made by the Public Treasury to the agricultural co-operative credit societies, for the formation of their foundation capital. The rate of interest on these advances is 3 per cent. and repayment must be effected during the 13 subsequent years, the first payment being due at the end of the sixth year. The co-operative credit societies receiving advances in this way are expected to undertake, *inter alia*, not to operate except within the limits of the commune in which they have their headquarters, not to pay any remuneration to members, of the Administrative Council until the total of the loans granted by the society amounts to 100,000 *litas*. The member of the Administrative Council who keeps the books of the society may receive the salary provided for on the budget; further, the rate of interest, including the commission, to be charged by the co-operative societies for the loans made by them must not exceed 12 per cent.

The following figures may serve to give some idea of the position of the rural co-operative societies, without taking into account the agricultural credit co-operative societies of the Territory of Memel:—

	31 December 1930	31 December 1931	31 December 1933
Capital owned by the societies (in millions of <i>litas</i> ) . . . . .	5.22	6.08	6.98
Deposits (in millions of <i>litas</i> ) . . .	17.13	20.86	21.19
Debts to Banks (in millions of <i>litas</i> ). . .	8.94	12.13	12.35
Loans granted (in millions of <i>litas</i> ). . .	31.70	40.52	41.66
Number of societies . . . . .	287	285	292

The position of the Lithuanian rural co-operative credit societies is sound. Of their borrowers 95 per cent. are cultivators, whose holdings are relatively lightly indebted. In addition, the supplementary liability, equal to half the

amount of the credit opened for each of the nearly 80,000 members, constitutes a special guarantee for the security of the deposits and of the other forms of capital.

Up to 1929 the Lithuanian co-operative societies of agricultural credit apart from those existing on the Territory of Memel, belonged to two Central Unions: the Bank of Lithuanian Co-operation – “Lietuvos Kooperacijos Bankas” – and the Central Farmers’ Bank – “Centralinis Ūkininkų Bankas”. In consequence of unsuccessful operations for the account of the Farmers’ Union the Central Farmers’ Bank was obliged in 1929 to go into liquidation. At the present time, the majority of rural co-operative credit societies in working are attached to the Lithuanian Bank of Co-operation, founded in 1920. Among the members of this Bank, however, there are included not merely the co-operative credit societies, but also co-operative consumers’ societies and other co-operative societies. The share to be subscribed by the member society is 500 litas; the liability of each member for the operations of the Central Union amounts to double the value of the credits which, in case of need, might be advanced to any one of them by the Bank. Apart from its financial functions, the Bank also assists the agricultural credit co-operative societies by giving them instructions and guidance, and by supervising and co-ordinating their activity.

The following figures will illustrate the activity of the Bank of Lithuanian Co-operation:—

	31 December 1930	31 December 1931	31 December 1932
Number of members (including the co-operative credit societies) . . .	255 (181)	221 (173)	205 (165)
Owner capital (millions of litas) . . . . .	0.61	0.65	0.65
Deposits . . . . .	6.3	6.9	6.0
Debts at the Banks. . . .	0.3	1.4	1.0
Loans granted . . . . .	6.3	6.9	6.0
Balance sheet total . . . .	10.2	10.7	9.1

In the Territory of Memel are found co-operative credit societies of the Raiffeisen type, organised before the war. In 1932 there were 39 of these. The position of these Raiffeisen co-operative societies was as follows on the 31 December of 1929, 1930 and 1931 respectively:—

	31 December 1929	31 December 1930	31 December 1931
Share capital in millions of litas). . . . .	0.19	0.26	0.29
Deposits . . . . .	14.2	17.3	18.7
Debts to Banks . . . . .	4.26	4.88	6.11
Loans granted . . . . .	17.08	20.89	23.47

In 1923 the Raiffeisen co-operative societies of the Territory of Memel founded a central Bank “Raiffeisenbank A. G.”, which as a rule makes advances to members in the form of current account.

## VI. — OTHER AGRICULTURAL CO-OPERATIVE ORGANISATIONS.

Among the other agricultural co-operative organisations, the most important are the Breeders' Associations. In 1932, there were three societies of cattle breeders, three of horse-breeders, one of pig breeders, and one of poultry and small stock breeders. The number of these societies is very limited as their activity in each case is extended over the whole country. Their most important work is the keeping of herd books. The Herd Testing Associations work in close touch with the Cattle Breeders' societies; in 1931-32 there were 145 societies including 2,919 herds and 33,661 cows under test. The five first testing associations were founded in 1923. This type of agricultural co-operative societies did not exist in Lithuania before the war. All the Breeders' societies work in close contact with the Kaunas Chamber of Agriculture which supervises and co-ordinates their activity.

Among agricultural co-operative societies of less importance there should be mentioned (figures in brackets show those registered up to 1 January 1933): apiculturists' societies (17), co-operative societies for the joint use of farm machines and implements (109), and a Central Insurance Union or « Kooperacija ». This last acts as a co-operative fire insurance society. The membership is drawn mainly from the family farming class and from the existing co-operative societies. For 1932 the capital insured amounted to 30 million *litas*.

It will be seen from the preceding account that co-operation plays an important part in nearly all branches of agriculture in Lithuania. The production of bacon - Lithuania having become in recent years one of the main suppliers of bacon to the British market - and the sugar industry are alone in being in the hands of share companies, the « Maistas » and the « Lietuvos Cukrus » respectively. The « Maistas » has four large modern establishments for the preparation of bacon and the « Lietuvos Cukrus » established in 1931 the leading sugar refinery in Lithuania. At the present time, the Ministry of Agriculture is the largest shareholder of the two limited companies, but the number of shares held by the farmers is on the increase and with time they will acquire the greater proportion of the shares of these companies. When payments to the farmers are made by the « Maistas », the company keeps 5 *litas* per pig delivered and hands over shares for the value of the sum retained. The payments of the « Lietuvos Cukrus » to the beet growers are made in a similar way.

## VII. — THE COUNCIL OF LITHUANIAN CO-OPERATIVE SOCIETIES.

The first Congress of Lithuanian co-operative societies was held in March 1920. The second Congress, which was held in May 1922, passed a resolution for the formation of a directing organ of Lithuanian co-operative societies. In the same year, the « Lietuvos Kooperatyvų Taryba » (Council of Lithuanian Co-operative Societies) began to function. Its activities include: examination of questions of common interest on the subject of co-operation, co-ordination of the activity of the societies, advisory and inspecting functions, the organisation of courses in co-operation, the summoning of congresses of all the Lithuanian

co-operative societies, the representation and protection of the interests of the societies as against any action of the public authorities. At the present time the Council includes among its members the "Lietūkis", the "Pienocentras", the "Lietuvos Kooperacijos Bankas", the Insurance Union "Kooperacija". The Council publishes a monthly review "Talka" (Common Toil) and a popular paper "Bendras Barbas" (Work in common). The Council of Lithuanian Co-operative Societies, it may be added, belongs to the International Co-operative Alliance and represents its societies at international congresses of co-operation.

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SEEDORF Prof. Dr. W. and HESSE Prof. Dr. P.: Grundriss der landwirtschaftlichen Marktlehre. Berlin, Verlagsbuchhandlung P. Parey. 1932, pp. XII and 351.

[The appearance of a book on the science of agricultural marketing may be regarded as a sign of the times, an index marking the present phase of world economic development.

At the period of transition from the war to the peace economy when for more than four years European agricultural production remained greatly reduced, all efforts were directed towards restoration by every available means of agricultural resources and towards an increased agricultural production. Thus it was the problem of production and of increased production that mainly occupied the attention of statesmen in framing the different measures which arose out of the agrarian policy.

In 1919 Prof. SEEDORF, with whose name the whole movement of the scientific organisation of agricultural work in Germany immediately after the war was connected, published his book: "The Improvement of Agricultural Work and the Better Training of Agricultural Workers with special reference to the Taylor system", wherein he makes the following remark: "The human labour force is today the only assured and unassailable possession left to us in Germany... A complete and thorough investigation of the whole sphere of agricultural work is required." The ideas to which expression was given by Seedorf in this book took practical effect in the establishment of institutes for research on agricultural production directed towards increasing the efficiency of human labour on the land (1).

The importance of the problem of production on the international plane is briefly expressed in the resolution taken in 1920 by the International Labour Office for the initiation of an enquiry into the world economic production and for "the stimulation", in the words of its late brilliant Director, Albert Thomas, in the preface to this enquiry (Vol. I, 1923, p. 12) "of the work of all the industrial classes with the object of obtaining a better return and in this way the making good of the deficiencies in production from which the whole world is suffering."

The fate that befell this enquiry, which is embodied in three large volumes, was a strange one, since in the actual course of the investigations on the failure of production, there supervened a quite unexpected development in economic life, namely, that the insufficiency of the volume of production has suddenly become transformed into a well-marked over-production, with the consequence that the problem has become from this time forward not the development of production but rather the

(1) See the publication of the International Institute of Agriculture: *L'Organisation Scientifique du Travail Agricole en Europe*, 1931.



crisis in respect of the marketing of agricultural products. As a result of the application of improved methods of work, production increased in 1925 in a proportion varying from 16 to 18 per cent. of the level of 1913, while the growth of population over the same period of time was only 5 per cent. (Memorandum on Production and Trade. League of Nations. Prepared by the Preparatory Committee of the International Economic Conference. Geneva, 1926, p. 5).

This situation has become since that date much aggravated. According to the Statistical Yearbook of the League of Nations 1932-33 (p. 168), the world trade which in 1929 amounted to 68,641,000,000 dollars had fallen in 1932 to 26,611,000,000 dollars, in other words, the interstate trading relations declined in the course of those four years by more than 60 per cent. Nearly half of this regression in world trade is due to the price decline, while the other half is a direct consequence of the contraction in the volume of trade.

There has been no improvement in 1933. On the contrary, if the value of the world trade in 1929 be taken as 100, the imports in July 1933 are found to be reduced to 34 and the exports in the same month to 35 (*Monthly Bulletin of Statistics*. League of Nations. No. 9, September 1933, p. 344).

The whole development of trade, instead of pursuing the pre-war course, has thus been undergoing during these latter years a very perceptible shrinkage. As was remarked by the Conference of Experts of the League of Nations for the preparation of the Second International Economic Conference in January 1933: "Every one wants to sell and no one wants to buy".

In consequence of this state of affairs, much more careful attention is given than before by different institutions to economic conjunctures, to periodical fluctuations and in general to organisation of the market.

A number of books of an unofficial nature dealing with the problems of the organisation of agricultural markets have also appeared within recent years, such are, for example, the volumes published by Sering, Beckmann, Asmis, Hesse, etc. See-dorf himself, the pioneer of Taylorism as applied to German agriculture, and Hesse his assistant and former co-worker at the Pommritz Institute, have now realised the necessity for turning their attention away from the factors of scientific production and of focussing it at present on the marketing of agricultural products.

As an introduction to the general problem of the scientific conduct of marketing, a brief but clear description is given of the economic evolution of the market from its origin in the family economy down all the successive stages of the foundation of towns and markets in mediaeval times, up to the emergence of the modern economy under which agricultural products, in order to find a market, have to pass often very far from their place of origin, and even to traverse continents. With the aid of the available figures and the concrete facts, the effects are shown on the sale of agricultural products of the population factor, the changes in the numbers and density of population, the decrease in income or more precisely in the purchasing power of that part of the income set for aside the satisfaction of food requirements. It is seen that in consequence of the facts stated the consumer turns towards the cheaper products of inferior quality.

Production of and demand for agricultural commodities develop independently, each pursuing its own course without any harmonious adaptation of the one to the other. The pre-war regulating force which intervened more or less satisfactorily in the relations of supply and demand and held the balance, as it were, between the demand of the world market and the supply from international production, is now practically non-existent, unless indeed the scientific principle of a planned economy replaces it.

In consequence the position is that either there is a production which far outstrips the demand for agricultural products, or the reduced demand, or rather the reduced market capacity, falls far below the volume of production. Just now it would appear that both these phenomena are present, and thus it is that as a result of "the imperfection of human reason", to quote Descartes, or of "human folly", as the author says (p. 8), the whole world organism of economy has gone to pieces.

The study of the characteristics of the different geographical zones of agricultural production on the national and international plane, and the analysis of the changes that have come about in the economic structure in the different countries, particularly the importing countries which after the war noticeably reduced their demand for agricultural products on the world market, are carried out by the authors with extraordinary erudition and lucidity. "There is fundamentally but little prospect" they say, "of a closer coincidence between production and the absorption capacity of the market being brought about again by natural means. This is the less probable seeing that the decline in the rate of increase of population in many countries seems to be definitely continuing, and that the food supply requirements accordingly do not on the whole increase to the same extent as formerly. In our opinion, it is only by State measures, and hence by artificial intervention, that production can be brought into economic relations with market demands." (p. 63).

Following on the study of the objective factors that influence the organisation of the market and the price formation, special attention is given to the economic activity of man on the market, often puzzling in its manifestations and containing unknown elements, the commercial transactions of farmers in their capacity as dealers, and the part taken by co-operative associations in economic life. Questions of trade monopoly, tariffs, quotas and in general the place of the State in public life are treated with due regard for the interests of the whole community.

The dominating idea of the writers is that the present disintegration of the world economic relations, and the difference in levels between the price of agricultural products on the national market and on the world market, are causing serious hindrance to the economic progress of society. "Although to-day, in consequence of economic and political measures taken, the level of national prices frequently, as in Germany, shows a divergence from those on the world market, and price formation is effected independently with the help of political factors, this state of things can hardly be regarded as a permanent situation. A radical change in the present day phenomena of the home and international markets would quite naturally stimulate the classes interested in trade movement of commodities to endeavour to obtain closer relations with the world market. Given the confusion of prices on the world market such an rapprochement does not present any special interest." (p. 305).

The writers do not cherish the vain hope of suggesting a panacea for the normal re-establishment of agricultural trade. Their penetrating analysis however may prove a stimulus to the investigation of the positive causes of the prevalent disorder in trade and may largely contribute to form a sound judgment on all the problems of the agricultural market which at the present time are vexing countries and continents].

M. T.

SOROKIN, PITIRIM A. ZIMMERMAN, CARLE C. and GALPIN, CHARLES J. *A Systematic Source Book in Rural Sociology*, The University of Minnesota Press, Minneapolis, Minn. 1932. Vols. 3.

The combined effort of three well known authorities in the field of rural sociology in the U. S. A. has produced a work which is a very valuable contribution to the

literature on that subject. As the title of the work itself implies, the purpose of the three large volumes which constitute it is not to advance new theories or to lay down new principles of rural sociology. In the words of the authors themselves this extensive work is intended chiefly to furnish students of rural economics with as much information as can be gathered on the subject from European, Asiatic and American historical and scientific literature; and the authors have drawn upon the most ancient as well as from contemporary sources. In fact the first part of Vol. I may be considered a compendium of the ancient and early history of rural sociology, dealing, as it does in the first chapter, with ancient Oriental, Greek and Roman documents; while the second chapter deals with the history of rural sociology from the 14th to the 19th century. The second part of the same volume deals with «the details of the external and more formal characteristics of the sociological organisation of rural life», i. e. the fundamental differences between the rural and urban worlds, the ecology of the rural habitat, the differentiation of the rural population into cumulative communities and functional associations, the social stratification of the agricultural population, the mobility of the rural population, the fundamental type of rural aggregates.

Volume II deals with the rural social world from the point of view of its institutional, functional and cultural characteristics. Taking the family as basic institution, the authors examine in detail all forms of social, political and economic associations of the rural population. Politics, religion, art, culture among the rural classes are carefully studied. The influence of urbanisation and of rural-urban reactions are dealt with in an interesting chapter on criminality, immorality and intemperance. Comparative data between conditions in cities and in the country testify to the superior moral code of the rural population as a whole. Like the first volume so this volume is enriched by quotations from the foremost writers on sociological, political and economic matters, which make reading not less interesting than enlightening.

Volume III is an analytical study of the physical characteristics of the rural population. Whenever necessary, the authors discuss the relative merits of rural as compared with urban life. Thus prevailing ailments, tendency to special diseases and reaction to them, birth, vitality and mortality rates as well as suicidal and murderous tendencies in cities and country are extensively dealt with. All this material is treated in several long chapters full of statistics and indices. The second part of this volume is chiefly dedicated to the study of rural urban relationships, every aspect of which is illustrated by quotations from the best world authorities. An index concludes the work while ample bibliographical references are given in numerous footnotes throughout the three volumes.

*Mitteilungen aus dem Internationalen Landwirtschafts-Institut in Rom.* Berlin, P. Parey, 1933. I. Jahrgang, Heft 1 (To be published about 8 times a year. Annual subscription, April-March. Rm. 12).

The German edition of the International Review of Agriculture had to be suspended at the end of 1930. However, through the courtesy of the Ministry of Agriculture of the Reich, it has been possible to keep former readers of the German edition in touch with the activities of the Institute by the regular publication of abstracts of the Institutes' bulletins in the journal *Berichte über Landwirtschaft* which is published at Berlin under the auspices of the Ministry. This information service, which, according to the general character of *Berichte*, lays a particular stress on economic problems, has been further developed, and is now also being published as a separate issue of the *Berichte* under the title "*Mitteilungen aus dem Internationale Landwirtschafts-Institut*". The first number of this periodical publication contains as a new important feature the

beginning of a current *International Bibliography of Agricultural Economics*, which is compiled by the Chief Librarian of the Institute on the basis of book and periodical material received regularly in the library of the Institute, which is one of the largest and most representative agricultural libraries of the world. A bibliography of international scope on agricultural economics has not existed heretofore. There is little doubt that the material contained in this new bibliography will be of considerable value for all research workers and agricultural economists in the different countries. Every effort is made to render the compilation as complete as possible, but at the same time to eliminate material of secondary importance. Not only books and separate pamphlets are listed, but also articles in periodicals, as far as the bibliographer may presume that the information contained therein will be of permanent interest to the research worker. News of purely transitory interest is excluded. The titles are given in the original language, translations being added for the less known idioms in one of the recognised world languages. Completeness and accuracy of bibliographical details facilitate the search for the originals. The field of agricultural economics is covered in the broadest sense, including agricultural policy, land tenure, internal colonisation, credit, cooperation, insurance, marketing, prices, taxation statistics, farm labour, farm management, farm accountancy, agricultural geography and history, rural education and sociology, etc. The bibliography is systematically arranged and author and geographical indexes will be supplied at the end of each volume. It may be hoped that the Institute may later on be in a position to take over itself the publication of this bibliography and to develop it by including also the technical branches of agriculture, where a need for a quick comprehensive and international indexing service of world's literary production is also much needed, although good partial bibliographies for various practical topics do already exist. The amount of research work as published in the great number of scientific publications of the different countries of the world is so overwhelming, that an international key to it, in the form of a current *International Bibliography of Agriculture*, becomes a vital necessity.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

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### POPULATION DEVELOPMENT, WHEAT PRODUCTION AND WHEAT TRADE OF THE WORLD

The present study is almost exclusively based on the publications of the International Institute of Agriculture at Rome (International Yearbook of Agricultural Statistics, etc.) In the case of lacunae occurring and for purposes of comparison the official statistics of the different countries have been utilised. The figures have been established with all the accuracy that is practicable, but it is of course impossible to exclude all sources of error, as even at the present day the data for large areas of Asia, Africa, etc., are more or less uncertain. A correct idea of the actual position of the world wheat market may however be obtained from the data that have been utilised.

#### (A) THE SIGNIFICANCE OF POPULATION DEVELOPMENT FOR WORLD WHEAT PRODUCTION AND FOR THE WORLD TRADE IN WHEAT.

When any attempt is made at a comparison of the views and opinions expressed in regard to the world economic crisis by persons well qualified either by their knowledge of economic theory or by their practical experience of economic questions, the conclusion reached is that the explanations put forward alike of the nature and of the causes of the crisis are highly contradictory. Some authorities are of the opinion that the present disruption of the world economic structure is, although of greater magnitude, merely one among such crises as have constantly been observed in the fluctuation of the economic cycle. Their firm conviction is that there is no ground for economic pessimism, and further that once the present distress is overcome there will be a readjustment in the direction of progress greater than any so far within the experience of mankind (J. M. Keynes). Others see the final cause of the catastrophe in the shrinkage of gold production and in the accumulation of gold in some few countries. Others again connect it with the exhaustion of the national and international credit sources, with the impairment of moral forces, a crisis in confidence, a factor as indispensable for modern economic organisation as is the physical volume of the gold supply. Other authorities

NOTE. — The *International Review of Agriculture* is glad to publish the following interesting monograph by Prof. HENKELMANN. At the same time it should be understood that for the opinions expressed and the conclusions reached the author is alone responsible.

are equally convinced that the basic cause is an ill-directed production without corresponding marketing possibilities. To these various explanations may be added the differing points of view which the students of the special conditions of the individual countries are impelled to adopt. Still more contradictory and bewildering is the multiplicity of counsels as to the remedying of the agricultural crisis (1).

It is not the intention of the present writer to add any new theory to all those in existence as to the connection between the general economic crisis and the agricultural crisis. There are however certain facts and events of a national and international order occurring within the economic framework of post-war agriculture to which attention may be drawn, since, although so far but little account has been taken of these, they will, in all probability, prove to be determining factors for the general agricultural situation in the future, whatever may be the outcome of the world economic crisis. We are on the threshold of far-reaching structural changes, indeed of a reconstruction of the agricultural bases of the world economy, a reconstruction which will have a decisive influence not only on the direction of agricultural development, but also probably on the foundations of the entire superstructure of world economy (2).

In any discussion of changes in the structure of world agriculture, the mind naturally turns first to the great technical advances that have been achieved within the last decade in the overseas and other competing agricultural countries, advances which are everywhere the subject of comment and the effects of which are fairly generally considered to be a factor in the continuous fall in agricultural prices. Among such there come to mind the introduction of tractors, disc ploughs and the combined harvester-thresher, and generally the so-called complete mechanisation of the overseas cereal growing areas; the measures for reduction of costs and increase of yields and especially for the improvement of marketing organisation, all measures by which the overseas countries during the post-war period took the world by surprise. In the land of "unlimited possibilities" new marvels of technique were accomplished daily. Hence it is in no way astonishing that with the apparently endless series of problems to be solved daily it is not observed, or there is no wish to observe, that the foundation on which these valiant and costly projects are being reared has already become unsound and that in places it is giving way to a serious extent. Full recognition should be accorded of the rapidity of advance in agricultural technique of the past decade, with the striking development brought about in the quantity and quality of products placed on the agricultural market; but in spite of all such progress, the factors decisive for the future shaping of the agricultural situation are not to be found among the changes on the supply side of the market. The decisive facts are discoverable rather in the fundamental changes which have taken place on the side

(1) BRINKMANN, Dr. TH.: «Schicksalsfragen und Zukunftsaufgaben der deutschen Landwirtschaft», *Mitteilungen der Deutschen Landwirtschaftsgesellschaft*, 47. Jahrgang, 1932, S. 108.

(2) *Ibid.*



of demand, in the sudden check in the population increase precisely in the importing countries on the world market (1).

The statistician E. Kahn observes, and not without reason, that the phase of our economic history covering the climax of capitalism seems unimaginable without a large contemporary increase of population. There was so to speak a race between population and production, in which population increase nearly always had a short start of production. It seems not to be a chance coincidence but a relation of cause and effect that in the period of the slow moving beginnings of capitalism it took nearly 500 years — from 1350 to 1820 — for the population of Europe to increase from 100 to 200 millions, whereas some eighty years have been enough, in the period of the climax of capitalism, to raise these 200 to 400 millions.

The natural growth of the population, or in other words, of consumers, had thus apparently brought about almost automatically a wellnigh unlimited expansion of the market, for with the exception of the increased numbers in Eastern Europe, all these millions appeared as new purchasers on the market for agricultural products. For a long time now however there has been a decided slackening in this tendency towards increase. Population has, so to speak, dropped out of the race, and according to the investigations of eminent statisticians there is now in view a stationary condition or even a decline of population, while production goes on unchecked, or at least "slowing down" is as yet hardly noticeable. Although this phenomenon does not yet appear to find confirmation from any superficial survey of the population development in the different countries and in the world, a closer study reveals that the position is that of a declining population and we are not aware of it simply because an absolute increase is still going on. This increase actually continues, in spite of the fact that the average, taking all countries together, of three children to a household, the number calculated as essential for the maintenance at the same level of the world population, has for some time no longer been attained. The explanation lies in the fact of the abnormal age-grouping of the population in the countries most important for the population movement as well as in the diminished death rate. The phenomenon of the decline in the birth rate is an international one, and this transition from an increase to a decline in the numbers of mankind marks a decisive turning point in the economic history of the peoples belonging to the European and American civilisation. The Slav peoples have gone so far in conscious birth restriction that the end of the natural increase of population seems to be within sight.

Only a very dim idea can be formed of the population movement in the Far East with its Asiatic races, since for readily intelligible reasons, the data are extremely fragmentary and it is impossible to arrive at any sound conclusion. It seems however that in the most important regions high fecundity is found side by side with a correspondingly high mortality of infants and young

(1) KAHN, E., *Der Internationale Geburtenstreich*. Frankfurt 1930, S. 99.

\* *Lc. 11 Ingl.*

children, so that for the time being no large population surplus is formed. How far the Far East will be affected by a further infiltration of modern European standards it is impossible to say, since the influence of irrational, and especially of religious impulses cannot be even approximately estimated in those countries. The Japanese biologist, Dr. Asajiro Oka, brings new and abundant material to show that there is a decline in population in Eastern Asia, so that the Far East would seem to have been drawn already into this current.

In any case the tendency is evident in the vast territories of the continents of Europe and America, which are for the time being of most concern to us. There are of course differences in intensity in the different nations, but the fundamental tendency is everywhere the same; there is a general participation in the international phenomenon of the decline on the birth rate (1).

"To understand the importance and the full scope of this process in world history which we are witnessing and which will be decisive for the future development of the whole world economy, there must be kept clearly in view the extent to which the whole endeavours and activities of the past, all considerations, hopes and expectations have been influenced by the idea of forward movement. The whole present generation of our farmers have grown up in the belief that a continuous increase in population and along with it a continuous expansion of trade, a constantly increasing demand for the products not merely of industry, but also of agriculture was a "normal phenomenon" of economic development. Whole countries and immense continental areas were opened up within the lifetime of the last generation, not merely for purposes of settlement, but because men believed, as did Malthus, that unless such areas were brought under cultivation there would one day be a shortage in the world's food supplies. The timely opening up of new world resources in regard to cereal and meat production seemed to be a dazzling speculation for the future. A veritable intoxication with the idea of development and "progress" had taken hold on the world, and all the facts seemed to justify the conviction." (Brinkmann). Under the illusion that consumers could be "grown" like tomatoes or salad in the spring in beds or under glass, provision was made for further extension of production with increasing yield capacity in the anticipation that the consumers, for whose benefit this vast machinery was being set up, would come into existence of themselves. That the impetus to expansion of an economic system which had become an end in itself, could one day find its goal in a void was entirely beyond conception.

"The spectre of overpopulation has fled, and in the place of dreams and imaginings a stern awakening has come about. The world speculation in agriculture, the settlement policy of the overseas agricultural countries, a policy which had been framed on long views, has proved itself a fundamentally miscalculated speculation. The food resources of the world instead of showing

(1) KAHN, *loc. cit.*, p. 63.

shortage have become, at least for that section of mankind on the consumption of which calculations had been based, suddenly too large. "

" It is agriculture which will have in the first instance to bear the consequences of the regressive movement of population, since its participation in the advantages of any re-adjustment or stimulation of demand can only be small. There is a limit to the need for agricultural products, and one which cannot be overpassed, *viz.*, the capacity of the human stomach multiplied by the number of human beings to be fed. The effect of the lowered rate of increase in population is in fact bound to be more noticeable in this respect, from the fact that with the large increase in consumption during the pre-war period the saturation point of the per capita consumption was all but reached, especially of the low priced mass products. Hence a rise in *per capita* consumption, equal to that taking place in the last pre-war decades, can no longer be counted upon. " (1)

This will be the position of the entire world market in agricultural products in the future. The rivalry between the agricultural exporting countries of the world and the agricultural production of the European importing countries is, not for the first time, convulsing the world agricultural interests, but this rivalry has now entered upon a quite new phase of development, of which the characteristic feature, as compared with the period of agricultural crisis in the last century, is a stable demand on the market of agricultural products. " (1)

With the cessation of the natural increase in the number of consumers it will become necessary to encourage changes in the quality of consumption, to substitute intensification, so to speak, for expansion of demand. The former primitive satisfaction of needs cannot in fact be longer continued on an ever increasing scale. If selling capacity is to be increased, attention must be turned to the refining of requirements.

Out of the many problems connected with the population movement, the world wheat problem is the only one which will here be attacked, as being the problem which at the present time commands *most* attention. The wheat problem is in fact rightly designated a world problem.

Before turning attention to the production of wheat, the trade in wheat and wheat consumption, in relation to the population development of the world, consideration will first be given to these conditions as found in those countries which are of decisive importance in framing any judgment in regard to the world wheat problem. These are in the first instance the principal European wheat importing countries and the overseas wheat exporting countries, whereas the significance of the remaining countries for the problem is subsidiary. The discussion of the situation in the principal [wheat importing and exporting countries will accordingly be followed by the survey of the world wheat situation as a whole.

(1) BRINKMANN, *loc. cit.*

(B) POPULATION DEVELOPMENT, WHEAT PRODUCTION, IMPORTATION AND CONSUMPTION IN THE PRINCIPAL EUROPEAN WHEAT IMPORTING COUNTRIES.

In the consideration of the conditions existing in the most important of the European wheat importing countries there is justification for treating the conditions in Germany, on account of their special character, apart from those in the other countries taken together.

I. — GERMANY.

1. — The Population Development.

During the period under review the population of Germany increased at a nearly uniform rate with slight fluctuations from 1900 to the time of the outbreak of war in 1914.

If however this movement is considered in more detail (see the lines indicating trend in Graph I a), it cannot escape notice that this tendency to increase, after a violent break in 1905, begins quite slowly, but still evidently, to decline. This slowing of the rate of increase in population is the consequence of the decline in the birth rate which had already begun about 1890, but became more marked from 1901 to 1913.

In Germany the number of children to a marriage, reckoning the legitimate and illegitimate births together, were as follows for the succeeding periods (1):

1871-80 . . . . .	4.5
1881-90 . . . . .	4.7
1891-1900 . . . . .	4.4
1900-1913 . . . . .	4.0
1919-28 . . . . .	2.1
1929 . . . . .	1.9

During the war years 1914 to 1918 there was at first a stationary condition due to the call to arms of the classes liable to military service and to the war losses, but from 1915 onwards there was a marked decrease in population.

After the end of the war the population increase was none the less very small as compared with that of pre-war times, since in consequence of the changed standards of living among the masses of the population at large as well as of the deterioration in conditions of life among the German people, the conscious restriction of births had become almost universally accepted. This tendency has become so strong that in Germany the transition is already going on from the two-child to the one child family, as may be seen from the foregoing table. According to the investigations of eminent statisticians the position in Germany

(1) KAHN, *loc. cit.*, S. 12 et seqq.

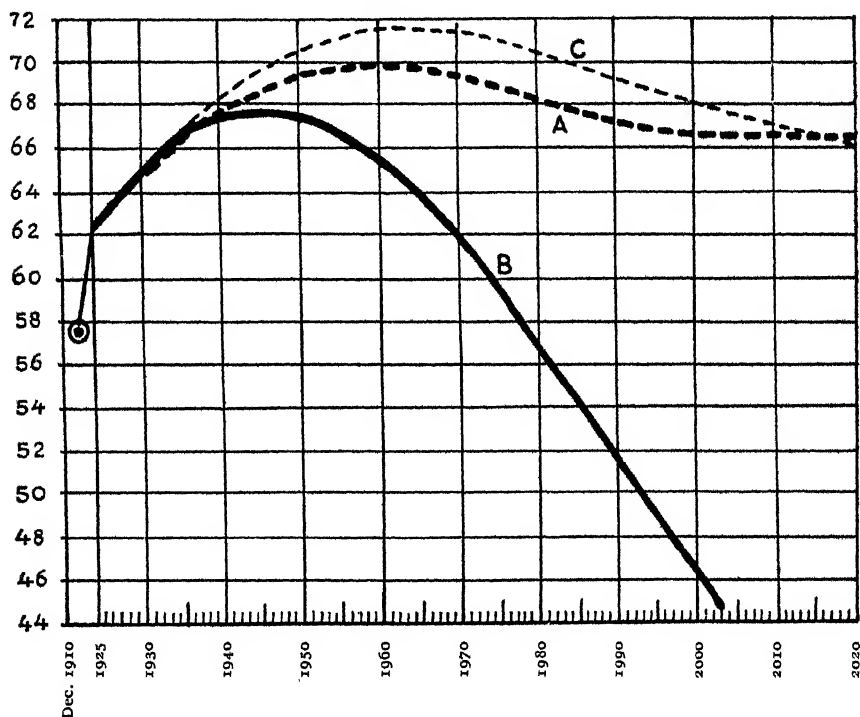
is already that of a decreasing population. It is true that there is still a continuous increase, although the average, calculated as essential for the maintenance of the population numbers, *viz.*, three children to a family, is now replaced by 1.9 only. The explanation of this lies in the abnormal age-grouping of the population in Germany of to-day. Before the war there were only 9.5 million persons between the ages of 20 and 30 years, the ages during which some three fourths of the marriages made are contracted. At present there are some 12.5 million persons of those ages, a fact mainly accounting for the large number of marriages contracted at the present time. This abnormal age grouping, in consequence of the relatively lower density of the older age groups, affects the mortality rate, but will cease to do so when the numerous young people of the present have become the large class of old and elderly people of tomorrow. On the other hand the "marriage conjuncture" already mentioned leads to a partial equivalence; instead of relatively fewer but prolific marriages there are now more marriages but with fewer children. This "high tide" of marriages must however shortly come to an end for lack of candidates for matrimony and, at the latest, when the small age groups of those born during the war reach the age of marriage. It is in any case beyond dispute that the natural increase of the German population will cease; within one decade the figures of births and deaths will cancel out. Naturally no one can say whether the decline in the population will be slow or rapid. The difficulty in making any such forecast is due to the fact that it is impossible to foresee the degree of the duration of this reduction in the number of children, and all statistical calculations become more problematic in proportion as they outstrip actual happenings. No one can say whether the decline in the birth rate will become less or more marked, or whether there may not even be once more an increase, or whether the efforts made to prolong life will not have unexpected success or even whether pests or wars may not cause ravages among large masses of human beings.

The Statistical Office of the Reich has made calculations in regard to the future development of the population of Germany up to the end of the 20th century and have made such a choice of bases that the actual movement may be anticipated with a degree of certitude within the limits laid down.

It may be safely assumed that conscious limitation of births will become prevalent as time goes on also among the majority of those strata of the population which at present are still prolific, but it is scarcely possible to make any pronouncement as to the degree in which fertility will decline in consequence of the practice. This degree of decline will be determined not only by the changed outlook on life among the masses of the people, but also by the economic situation. It is for this reason that the most favourable population development, *viz.*, the development supposing that the number of living births remains unchanged, is also the least probable (Case A.). It may be supposed that the actual development will tend to be that of Case B. *viz.*, that the birth frequency will fall 25 per cent. below the already low average level of the present time. This may seem somewhat too pessimistic, but the possibility is by no means excluded that in the event of an actual worsening of the conditions of existence among the German people, the birth frequency may fall still further.

Any calculation of this kind is bound to leave out of count the mortality conditions and also the migratory movement. While, in view of the position of the international population movement, the prospects of a considerable immigration into Germany are certainly not excluded, there is little likelihood of such a phenomenon, since the neighbouring countries also show steep declines in the birth rate.

*Probable development of population in Germany*  
(Total numbers of the population).



A) Assuming the number of living births to remain the same:

B) Assuming that up to 1955 the number of births will diminish by 25%, afterwards remaining stable.

C) Assuming the frequency of births to remain the same.

Taken from the "Statistik des Deutschen Reiches" vol. 401, II.

From these considerations it appears that up to about 1945, Germany may count on a population increase of about 3.5 to 4 million, but after that, if the numbers of births still continue to decline, the population will shrink with increasing rapidity. The German population will in this way possess an extraordinarily unfavorable age-grouping.

## 2. — The Development of Wheat Production in Germany.

### (a) *Development of Areas under Wheat Cultivation.*

The crisis in cereal cultivation which began in the seventies of last century passed after the lapse of more than a quarter of a century. In Germany the recovery was greatly helped by the tariff increase resolved on in 1902 and brought into effect in 1906 (see Graph Ia). During the years 1906 and 1907 the effect of this tariff increase was that the price relation between wheat and rye altered very considerably in favour of rye, and consequently in 1907 there was a reduction of the area under wheat cultivation. On the re-establishment of the equilibrium of the prices, however, wheat growing steadily extended with a few setbacks only, and in 1915 the area under wheat was almost equal to the largest ever covered by the crop (*viz.* 2,049,000 hectares in 1899-1900), an area which in other circumstances might possibly even have been exceeded. From 1915, owing to the effects of the war, there was an extraordinary diminution in wheat growing. From 1919, however, and up to 1927 there was again a large increase which was interrupted only by inconsiderable fluctuations. In 1927 under the influence of measures for the protection of rye and also of an exceptionally large importation of wheat, the price ratio between wheat and rye altered in favour of rye, with the result that in 1928 there was a slight reduction in wheat cultivation. As this unfavourable price relation continued in 1928, wheat cultivation underwent further decrease, which assumed disastrous proportions in consequence of the serious effects of the exceptionally cold winter of 1928-29. At the beginning of 1929 a more favourable level of wheat prices was restored owing to the tariff protection policy and the introduction of the obligation to mill German wheats, and in 1930 a large expansion of the cultivation followed, while a further extension resulted from the propaganda in favour of a transition from rye to wheat growing which was put forward at the same time as the protectionist policy. In 1931 the fixing of a quota for the cultivation of sugar beet had the result of increasing that of cereals and especially of wheat. At the same time, owing to unfavourable livestock prices, there was a change over to wheat growing in large areas of Germany, especially in the north, north-west, west and south. All these factors contributed to make the area under wheat in 1932 attain the record figure of 2.28 million hectares. This transition from rye to wheat is an achievement which has not received sufficient attention owing to the adverse conditions and want of capital prevailing in German agriculture, but on the other hand it is one which may eventually produce fresh dangers for the only agricultural product which is still remunerative.

### (b) *Development of Unitary Yields.*

After the cereal crisis was surmounted and from the beginning of 1890 intensification of German agriculture was undertaken on a large scale. With the rapid growth of the population there was a shrinkage in the subsistence

margin, and on this account and even more because of the decline in farming receipts due to the low prices of wheat, efforts were made to remedy the situation by securing higher yields per unit of area. These yields rose from about 16 quintals in the nineties to about 22 quintals in the pre-war years.

Under the influence of the war economy measures this tendency to increase yields was followed by an abrupt decline up to 1917. In 1918 the yields again somewhat increased, but the conditions prevailing in first post-war years (long-continued exhaustion of soil, poor cultivation, prolongation of the control measures, and beginning of inflation) were far from favourable to such increase. The recovery of German agriculture begins with the removal of control, and from 1921 there was a relatively rapid rise in yields per unit, although with unprecedentedly large fluctuations, and in 1928 the high level of 1912 was again reached. From 1929 to 1931 there was a decided fall in the yields due to unfavourable weather conditions, but in 1932 the average yield was once more 22 quintals par hectare. The exceptionally large post-war fluctuations were mainly due to a recurrence of unfavourable weather conditions and were not confined to Germany. In spite of the continued extension of cultivation to lands less suitable for wheat, there has been but little diminution in yields per unit of area.

(c) *Development of Aggregate Wheat Production  
and of per capita Production.*

The area under cultivation multiplied by the yield per unit of area gives the total crop production. As is shown by Graph I a, the large pre-war increase in the total production is to be attributed to intensification or increase in yields per unit of area. The post-war wheat production also shows a rising tendency but it is the area rather than the yield per unit which increases. In the agricultural year 1932 the wheat production not only greatly exceeded the pre-war average but also the maximum crop of 1913 which amounted to nearly 400,000 tons.

If a relation is established between wheat production and population, the somewhat surprising fact emerges that the per capita pre-war production in spite of the large increase in population not only remained nearly the same over the period but in 1911-13 it actually increased. It is true that in 1902-07 a quite small drop in the per capita production is noticeable, but it is followed in subsequent years by a steady rise, so that in 1913 the highest quota was reached. Even if the growth of population had continued at the high rate of the period before 1904, the actual increase in wheat production would have been proportional, and in consequence the *per capita* production would have remained the same.

In the post-war period there was a slow but steady rise in the wheat production which had been greatly depressed by the effects of the war and the control measures. The increase in production was more marked than of the population, so that in 1928 the *per capita* production had already reached the level of the average of 1900-1910. As the consumption of wheat had declined,



this rise in crop production led to a price crisis and necessitated measures of protection on the part of the *Reich*. The crops of the years 1929, 1930 and 1931 were poor, the first in consequence of the disastrous winter, and the two latter in consequence of persistent rainfall. In the season of 1932 the *per capita* production exceeded not only that of 1928, but also by 7 per cent. that resulting from the record crop of 1913. The prospects as regards wheat prices are accordingly somewhat gloomy.

### 3. — The Net Wheat Import.

During the pre-war period the net import of wheat into Germany varied round 1.9 million tons, the quantity depending as a rule on the result of the German harvest. Since the high import figure of 1907, there has been a tendency towards decrease in imports corresponding to an increasing home production.

From 1914 to 1918 there was an almost complete cessation of imports, and in the first year after the war, the quantity imported was very small.

In 1920 the wheat import began to recover, but the quantities imported were still insignificant. In 1921 on the other hand immense masses of wheat were poured into Germany, partly as remedying the extreme shortage of food-stuffs in the country, partly under pressure of the large overseas stocks. This wave of importation, however, ebbed almost as quickly as it had flowed, under the influence of inflation which acted in restriction of imports. In 1923 the imports had dropped again to the low level of 1920.

With the stabilisation of the German currency at the end of 1923, and as a result of the foreign credits made available to Germany, the wheat imports once more began to increase from year to year, till in 1927 a maximum of about 2.6 million tons was reached, and this in spite of the reduction of population due to territorial changes, the highest import figure ever attained for Germany, being in fact reached in this year. This flooding of the country with foreign wheat resulted in the enactment by Germany of measures of protection intended to ensure the progressive reconstruction of German agriculture by means of a large increase in national production. These measures together with a decided fall in the credit concessions brought about in 1928 a considerable drop in imports. As the pressure from the side of the national production became stronger the protection measures were in 1929 rendered essentially more effective by the introduction of compulsory milling of a percentage of home grown wheats. The milling quota for home wheats was repeatedly raised, and with effect from 15 August 1931, was fixed at 97 per cent. for the agricultural years 1931-32 and 1932-33. This step was taken in order to counteract the price depression that might, with the great increase in the areas under wheat, easily result from the limited absorption capacity of the market if the farmers in want of cash attempted to realise their crops too hurriedly. To meet the seasonal pressure, especially in autumn, measures were taken for financing the new crop and for facilitating the movement of grain. By means of free import permits a re-export extending over the whole year is made possible. The result of these measures was that the net wheat import in 1931 amounted only to about 520,000 tons, that is to say, it

was reduced to the quantity considered indispensable for mixture if a flour of good baking quality is to be obtained from German wheats. As the German wheat production of 1931 did not fully cover requirements, the Government was compelled by lowering the duties to give facilities for import in May and June of 1932. The regulations as to compulsory admixture of home wheats remained in principle the same, but a lower rate of admixture was allowed under certain conditions if it was a case of milling wheats imported under the more favourable terms of the Government enactment referred to.

The protection measures of 1931-32 are equally in force for the crop year 1932-33 and supplemented by measures for maintaining the price level of wheat.

#### 4. — The *per capita* Wheat Consumption.

The *per capita* wheat consumption, (i. e. the *per capita* quota of the total quantity available which is equal to the national production plus the excess of imports) fell between 1904 and 1910 slowly but continuously from 95 to 88 kg. The apparently sharp decline in 1908 is explained by the utilisation of the stocks remaining from the large importation of 1907 which in consequence of the national harvest had exceeded requirements. Following on the great increase in yields which began in 1911 and on the simultaneous increase in purchasing power, the quantity of wheat available per head rapidly increased and reached a maximum of 96 kg. in 1913. This development is also seen, as will appear, in the other European wheat importing countries.

In 1914 this development was interrupted by the world war. First imports stopped, and then the national production began to decline. If at first the areas under wheat showed some expansion, yields per unit of area soon rapidly diminished. With the complete cutting off of Germany from the world market, the available quantity of wheat was as early as 1915 no more than the national production and in 1917-19 fell with that to about one-third of pre-war quantity. It was not till 1920 that the wheat import was, although slowly, resumed and together with the increasing national production brought about a rise in the *per capita* wheat quota. The extraordinarily high wheat import of 1921 which was occasioned by the pressure of world stocks, together with still larger increases in national production, brought this quota almost up to the pre-war figure. The effect of the restriction of imports due to inflation was the less noticeable as national production was increasing and wheat consumption was declining. After the stabilisation of the currency however wave after wave of wheat imports rolled in on the country. The importation reached its maximum in 1927, when it stood at 30 per cent. higher than before the war, so that the *per capita* wheat quota, owing to a still increasing national wheat production, was above the pre-war average. At the same time, there was an actual decrease in, and in consequence there was an accumulation of stocks.

In consequence of the price crisis which was becoming acute, more drastic protection measures were introduced which at once reduced the imports and lowered the *per capita* wheat quota. The compulsion to mill national wheats still further reduced the imports. Accordingly, as the home crops of 1929 and 1930

were poor, the *per capita* wheat quotas in 1930 fell quite considerably below the requirements, so that recourse was had to utilisation of the stocks remaining from 1927 and 1928 and to a larger import of wheat in the spring of 1931. The crop of 1931 nearly covered requirements, so that only a small import was necessary; the crop of 1932 on the other hand quite covered the German requirements, but there was none the less an import of wheat, partly on technical grounds of baking quality, and partly as the result of a special regulation, whereby a part of the German crop was not utilised.

## 5. — The Covering of Wheat Requirements.

As shown by Graph I-*b*, in the pre-war period about 65 per cent. of the wheat requirements was met by the national production and the remaining 35 per cent. was imported. Since 1905 the proportion of imported wheat in the *per capita* supply of the German population began to decline, with slight fluctuations, slowly but continuously till in 1913 it stood at 27 per cent. In the war years Germany was obliged to depend on the national production only. In the post war period the proportion of imported wheats in the national supply at first increased rapidly and in 1927 was as large as 45 per cent. The movement for protection then began and quickly reduced the proportion of the import to 25 per cent. in 1930 and actually to about 10 per cent. in 1932. Germany has been among the principal purchasing countries in the international wheat trade, but the German farmer has been and is the principal supplier of the German market, and as conditions now are it may be that he will in the future be the sole supplier.

## 6. — The Outlook.

It is impossible to say with any certitude in what direction the conditions prevailing on the German wheat market will develop. It depends on a number of factors the effect of which cannot be determined in advance. On the supply side such factors are extension of cultivation, yield increases, crop returns and wheat imports; on the side of demand the main factors are the rise, stationary position or fall of the population figures, the variations in the *per capita* wheat consumption.

As the statistics of areas under crop show, the farmers have responded with surprising rapidity to the pressure put upon them to change over from rye to wheat growing, and if the information is to be trusted, the rise in yields per unit of area has also gone so far that steps must already be taken to guard against the dangers of over-production.

There is an increasing consumption of wheat in consequence of the increase in population, but the rate is slow corresponding to the slowing down of the rate of increase of the population, and the increase may disappear altogether or become a decrease.

It is quite other with the *per capita* consumption. If under the influence of the war and the inflation there was up to 1925-26 a marked decline in wheat

utilisation per head following on a reduced consumption of bread, there is anew a tendency to eat more bread, which, for reasons readily intelligible, is most noticeable in regard to wheat bread. From 1925-26 to 1928-29 there was a decided advance in the actual consumption of wheat, which in 1928-29 exceeded quite considerably the pre-war utilisation. With the further onset of the crisis and the accompanying reduction in purchasing power, the consumption however, from 1928-29, sharply declined.

*Consumption of Flour and of Wheat per head of the German population.*

Year	Rye-flour		Wheat-flour		Total flour			Consumption of wheat (Wheat flour reduced to wheat)	
	kg.	%	kg.	%	%	kg.	%	kg.	%
1912-13 . . . .	65.42	53.77	56.25	46.23	100	121.67	100	80.36	100
1924-25 . . . .	58.08	53.38	50.73	46.62	100	108.80	89	72.47	90
1925-26 . . . .	60.56	55.30	48.96	44.70	100	109.52	90	69.94	87
1926-27 . . . .	55.00	51.10	52.63	48.90	100	107.63	88	75.20	93
1927-28 . . . .	49.37	47.50	54.57	52.50	100	103.94	85	77.96	97
1928-29 . . . .	49.50	45.54	59.20	54.46	100	108.70	89	84.57	105
1929-30 . . . .	48.00	48.00	52.00	52.00	100	100.00	82	74.36	92
1930-31 . . . .	50.00	52.63	45.00	47.37	100	95.00	78	64.35	80
1931-32 . . . .	48.00	54.00	41.00	46.00	100	89.00	73	58.63	73

The end of the crisis and an upward movement on the market would no doubt bring a rise in the *per capita* wheat consumption. It need not be assumed that the consumption of wheat will decrease in the same degree as the population, since an expansion of the use of wheat precisely among the classes with low incomes is quite within the bounds of possibility. In this connection however there must be kept in mind the possibility of a return from consumption of wheat to that of rye.

The bumper wheat crop of 1932 has for the first time rendered clearly visible the spectre of surplus wheat with all its prejudicial consequences. As might have been expected, the compulsory percentage of national wheats for milling has been fixed for 1932-33 at 97 per cent. Certain mills, however, members of the Consortium of German Wheat Mills established in Berlin under the contract of 6 July 1932, are for the period 16 August 1932 to 15 August 1933 milling foreign wheat, imported under the tariff modification Order of 6 July 1932 free of duty or subject to the duty of 0.75 RM. per quintal only (*Austauschweizen*). For such mills for the duration of their membership of the Consortium the milling proportion imposed for national wheats is reduced to a minimum of 70 per cent.

In this case foreign wheats other than the wheat imported under the above conditions (*Austauschweizen*) cannot be milled in a higher proportion than 3 per cent. of the total quantities of wheat milled during the separate milling periods or months. Among financial measures there may be mentioned the advances made on delivery contracts and loans made on warehousing warrants. It is

possible to obtain advances on future grain delivery contracts up to 50-60 per cent. of the value of the grain to be delivered, also to secure payments by instalments up to 70 per cent. of the value of the grain on grain delivered to store with the condition that the supplier may on his side fix within three months the actual date of the sale as well as the final selling price, thus taking the advantage of the market situation. In addition efforts are made by the Government to encourage any tendency on the part of the mills belonging to the consortium to absorb national wheat. In addition special subsidies in aid of warehousing costs and reductions of rates of interest are granted, if the wheat placed in store is kept off the market up to the dates fixed.

Among the new measures affecting the wheat trade is the coloured wheat enactment which came into force February 1933. This coloured wheat is substituted for maize as a poultry feed and the measure is expected to effect an additional utilisation of wheat up to 250 to 300 thousand tons. The object is again to restrict unnecessary imports in favour of the national products.

It is in this way that it will be possible to maintain the price of wheat at a level acceptable to the farmer. At the same time a growing danger exists of the further extension of the areas under wheat, owing to the privileged position of wheat in regard to prices, to the point at which the national production may outstrip the national demand. Although in Germany the volume of the crop depends on the seasonal crop and harvest conditions rather than on the area under crop, a production in excess of the national demand must be carefully avoided.

If under the prevailing agricultural policy it proves possible to prevent the production of wheat from exceeding the demand or in certain circumstances to limit it, then German wheat growing may be regarded as assured, and the population may be supplied with national wheats at a relatively low price, corresponding to the general price level. Taking this movement into account it may be said that the import of wheat is likely within the near future to be of secondary importance for the supplying of the German market.

## II. --- THE PRINCIPAL EUROPEAN WHEAT-IMPORTING COUNTRIES.

In this enquiry the following countries are dealt with :

- |                               |                  |
|-------------------------------|------------------|
| (1) Great Britain and Ireland | (7) Switzerland. |
| (2) Germany                   | (8) Denmark.     |
| (3) Italy                     | (9) Spain.       |
| (4) France                    | (10) Sweden.     |
| (5) Belgium                   | (11) Norway.     |
| (6) Netherlands               | (12) Portugal.   |

The Succession States, Austria, Czechoslovakia, Poland are not included, as comparable material for an enquiry referring to a period of the length required is not available. There need be no scruple as to their omission, since the wheat importation into these countries is not large and the greater part is

covered by the supplies from the Danube countries. These importing countries not included in this statement have together a wheat import requirement of about 600,000 tons. As against this the Danube countries, Rumania, Hungary and Yugoslavia, had on an average from 1925 to 1929 a total export wheat surplus of one million tons, so that their omission is of no importance.

### 1. — Population Development.

The aggregate population taken of the 12 countries under review between the years 1900 to 1914 showed a considerable nearly uniform increase with slight fluctuations. There were certain "signs of fatigue" in the years 1902 and 1911, but these were compensated for in the following years by correspondingly larger increases. To examine the causes of these phenomena would lead us too far afield, since it is a questions of aggregates.

In 1914 this tendency in development was interrupted by the war.

During the war years 1914 to 1918 the population declined very markedly in consequence of the call to arms of those liable to military service and of the war losses.

In the post war period, in contrast to the pre-war years, there was only a relatively small increase in population. From 1927 this increase has shown still further decline (see lines of trend shown on Graph II a). The limitation of births as a mass phenomenon is here taking effect in noticeably slowing down the population increase. It can be established that the limitation of births has assumed now much larger proportions among the Germanic peoples than among the Latin nations as appears from the following survey: (1)

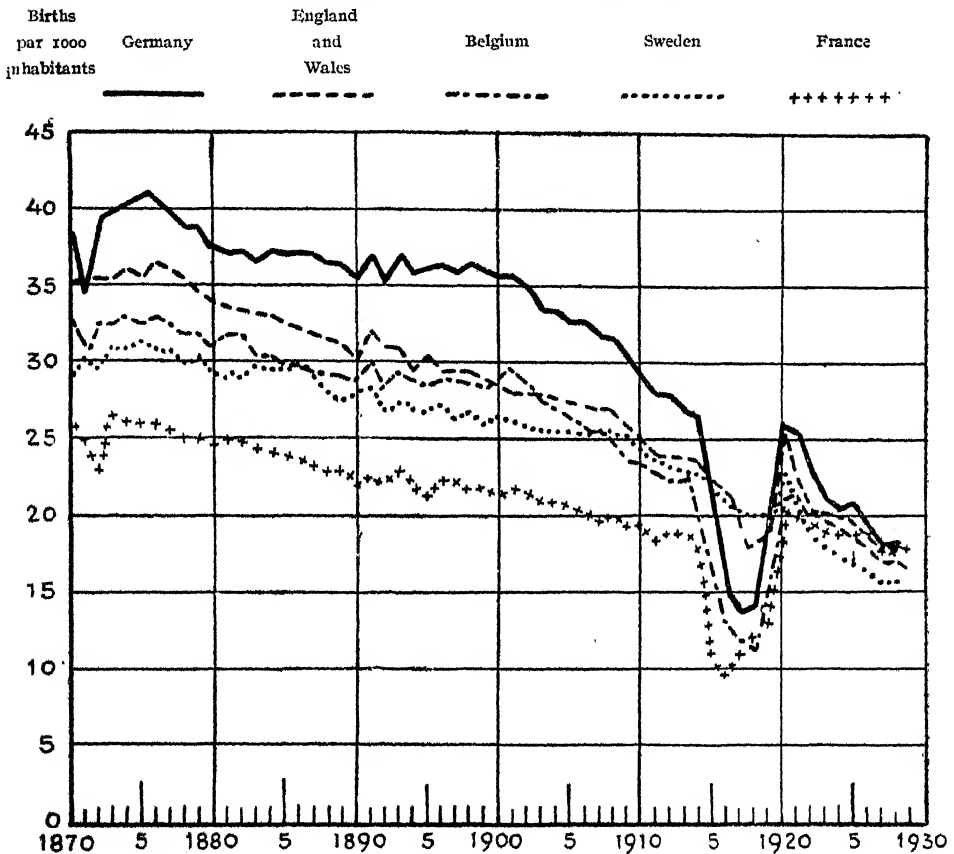
#### *Number of Births resulting from a Marriage.*

Country	About 1900	About 1929
Great Britain . . . . .	3.7	2.06
Ireland . . . . .	4.4	4.10
Germany . . . . .	4.4	1.94
Italy . . . . .	4.5	3.60
France . . . . .	2.9	2.18
Belgium . . . . .	3.5	2.80
Netherlands . . . . .	4.2	2.90
Switzerland . . . . .	3.8	2.20
Denmark . . . . .	4.1	2.50
Spain . . . . .	4.9	3.90
Sweden . . . . .	4.5	2.60
Norway . . . . .	4.3	3.00
Portugal . . . . .	?	4.50

(1) After KAHN, *Der internationale Geburtenstreich*, S. 64-65.

If and when the relative decline in population of these 12 countries will result in an absolute decline, it is difficult to say, since this movement proceeds with very different intensity in the separate countries. Here for the moment the fact may suffice, that France was the first country, owing to the very early introduction of birth restriction, to show an excess of deaths and that its population would have for a long time shown decline except for the direct or

*The Birthrate in five Countries of North-western Europe, 1870-1929 (\*).*



indirect effects of mass immigration. Further in Great Britain, seeing that the reduction in the number of children came earlier, mortality and birth curves might presumably coincide sooner than in Germany. The increase of the population of Great Britain in the decade 1921 to 1931 is due to the considerably lowered mortality and not to any increase in the births. The number of births in this decade is about 16.3 per cent. lower than in the decade 1911-21, although that period includes also the war years with their falling-off in births.

(\*) O. E. BAKER: "The Outlook for land utilization in the United States".

The further marked decline in the number of births, which was to be observed in most of the European countries in the first half of 1931, was still more accentuated in the second half of that year. As a result the number of living births in 1931 was everywhere, with the exception of some smaller States, noticeably lower than in 1930, in which year, as compared with 1929, there had been in all European countries (apart from Germany) a not inconsiderable rise in the figure.

In 1931 the countries showing, after Germany, the most marked decline in births were Italy, Hungary and Poland. In Italy the number of births was less by 6.9 per cent. than in 1930, in Hungary 8.5 per cent., in Poland 4.9 per cent. In France, Great Britain, the Netherlands, Switzerland, and Norway the decline in births amounted to between 2.5 and 3.5 per cent.

The mortality figures rose in 1931 as compared with 1930 by about 0.6 per cent. in France, by 1.0 per cent in Hungary, and in Italy, the Netherlands, Switzerland and Norway by from 0.5 to 0.7 per cent., while in Germany these figures were only 0.1 per cent. higher.

For this European area of first importance then the trend of population development, although there are differences in degree, is everywhere the same, so that the natural increase of population appears to be nearing its end.

## 2. — The Development of Wheat Production.

### (a) *Development of Areas under Wheat Cultivation.*

After the surmounting of the price crisis in cereals the growing of wheat reached in 1904 in the countries under survey a maximum extension which was maintained almost unaltered up to 1913. In 1914 a somewhat large diminution of the areas under cultivation began. This reduction continued in France (and Portugal) while in the other countries cultivation remains constant or even shows some increase. As an effect of the war, wheat cultivation was reduced between 1915 and 1917 by 17 per cent., but not so much as might have been supposed. Although the reduction in the areas under wheat cultivation in the countries most affected, Germany, France and Belgium, amounted to 3.2 million hectares, the total reduction was only about 2.6 million hectares. From 1917 there was a steady increase, with slight fluctuations, in the area under wheat up to 1927, although the pre-war extent of cultivation was not again reached. The position in France was a deciding factor here, where the area under wheat was in 1919 less than the pre-war area by about 1.8 million hectares and in 1927 was still some 1.3 million less. In 1927 under the influence of the world wheat crisis a larger diminution in the area under wheat began to appear, affecting all the countries with the exception of Portugal, Sweden, Norway and Switzerland. Under the influence of the general movement in favour of protective tariffs the area under wheat expanded from 1930 onwards, and in 1932 once more reached the highest pre-war level, that of the years 1904 and 1905. As this movement seems likely to continue, a further extension has to be reckoned with. In any case the area under wheat in the principal wheat importing countries of Europe remains remarkably constant.



(b) *Development of Unitary Yields.*

Although there have been considerable fluctuations of yield per unit of area, there has been no essential modification in the average, as compared with the prewar period. A definite relation between area under cultivation and yield may undoubtedly be established, and from this it appears that wheat growing is now extended to the limits of the lands capable of wheat production; this interdependence is not however so marked as not to be subsidiary to weather conditions. During the war up to 1917 crop yields showed both absolute and relative decline, although not to any great extent. A pronounced rise in crop yields then followed, although with wide fluctuations, such as have already been noted in the case of Germany, as consequent on weather conditions, and in 1929 a record figure was reached. The yield per unit of area in 1929 stood 22 per cent. higher than the average of 1901-1913, and 10 per cent. above the highest pre-war yield in 1909. In 1930, in consequence of unfavourable weather conditions, the yield declined, and also owing to bad weather the yield of the year 1931 was relatively low. In 1932 a record production was again obtained which was 15 per cent. above the highest pre-war yield, and 5 per cent. above the yield of 1925.

Under the influence of the protective tariff and the tendency towards national self-sufficiency a further advance in yields may be counted on as a result of intensive cultivation.

(c) *Development of Aggregate Wheat Production  
and of the per capita Production.*

As appears from Graph. II a, the total crop production in the prewar period had remained, in spite of the slight shrinkage of areas under cultivation, nearly at the same level in consequence of somewhat higher yields per unit of area, and in fact showed a slight increase. In the post-war period, on the other hand, a very considerable increase took place owing to the marked increases in yields due to intensification. In spite of the fact that in 1929 the areas under cultivation showed a 7 per cent. reduction as compared with the pre-war areas, the aggregate wheat production was 10 per cent. larger than in the last five years of the pre-war period.

If the wheat production is brought into relation with the population the somewhat surprising result is obtained that the *per capita* production in the pre-war period remained nearly at the same level in spite of the rapidly increasing population. Only a very slight diminution is noticeable.

During the war years the *per capita* production fell till 1917 to about 65 per cent. of the pre-war production.

In the post-war period the greatly reduced *per capita* production slowly but steadily increased, and reached, although with wide fluctuations, the pre-war averages in 1925 and again in 1929. In 1926, 1927, 1928, 1930 and 1931, unfavourable weather conditions resulted in a noticeably smaller *per capita* production, but in 1932 a maximum of 114 kg. *per capita* was reached, which

is about 5 per cent. more than the highest figure of the pre-war period. The movement for self-sufficiency in the countries concerned goes to prove that by means of a high degree of intensification, and by the increased yields accompanying such intensification an increased *per capita* production of wheat may be brought about.

### 3. — The Net Wheat Import.

In the countries under review the net imports of wheat showed up to 1908 considerable reduction, but from then till 1913, with a slight interruption in 1912, there was a still more considerable increase. This advance was abruptly checked by the outbreak of the world war in 1914. When the war was over wheat importation again increased considerably and in 1920 the average importation of the pre-war years 1911-13 was once more reached and was maintained at this level up to 1926 with relatively small fluctuations, corresponding to the crop results of the importing countries. In 1927 under the pressure of the large harvests and the stocks of wheat in the overseas countries the wheat imports went up with a rush, and the consequence was that in almost all countries measures were taken for the protection of agriculture, in particular the compulsory milling of home grown cereals, and accordingly since 1927 the imports of wheat into industrial Europe have once more markedly declined.

### 4. — The per capita Wheat Consumption.

The consumption of wheat per head of population, *i. e.*, the *per capita* quota of the total quantity available, which is roughly (1) equal to the national production *plus* excess of imports, remained during the pre-war period and even up to 1916 at nearly the same level, apart from somewhat wide fluctuations, and showed a slight increase rather than a reduction. In 1917, owing to war conditions, together with an unusually poor harvest, there was a sharp decline in the available quantity of wheat *per capita*. With the increased national production of 1918 this quantity was again somewhat increased, in spite of the further decline in the wheat imports. On the conclusion of the war, the wheat import was at once re-established on a large scale, but the home grown crops were still small, so that with the rapidly increasing population due to the return of the troops, prisoners and refugees) the available per capita wheat quota was again reduced up to 1920. In consequence however of the efforts for self supply in nearly all the countries under consideration, there was an intensification of cultivation leading to a large increase in the home grown crops, so that, although there were considerable fluctuations, the 1911-13 average was again reached in 1927 and the per capita available quota in 1929 approached the highest pre-war supply of 1911. In 1932 there was a further 6 per cent. increase.

(1) In a more accurate calculation of consumption the quantities of grain used for sowing should be taken into account, as these may change considerably with changes in the areas sown.

## 5. — The Covering of Wheat Requirements.

Before the war the home production of the countries under review accounted for about 66 per cent. of the available wheat supplies, while about 34 per cent. was imported. While from 1903 to 1908 the proportion imported slowly but steadily declined, from 1908 to 1913 it again increased and reached the level of about 40 per cent. of the whole supply. Although with the outbreak of war in 1914 this proportion at once declined, it again rose quickly to 50 per cent. (Germany excepted) up to 1916, and then declined up to 1918 to 38 per cent. In the first year after the war there was a slight increase in the proportion of imports in the wheat supply, but under the influence of the efforts for autarchy on the part of the importing countries, up to 1926 there was a slow but steady declining tendency with a slight interruption in 1924, the period of currency stabilisation in Germany. In 1927 under the influence of two poor harvests (1926 and 1927) there was a sudden marked rise in the proportion of imports but in the following years every means was taken to counteract this by high tariffs, compulsory utilisation of home supplies, etc. In the import season 1930-31 following on small wheat harvests in the countries under review there was an insignificant increase only in wheat import requirements, a fact giving proof of a further decline in these requirements in industrial Europe.

## 6. — General Outlook.

The future shaping of conditions on the European wheat markets depends on a number of factors, the effects of which cannot be determined in advance, and may be completely different in the different countries, or even actually conflicting. Extension of cultivation, increase of yields, crop results and wheat importation on the side of supply, advance, stationary condition or decline of the population figures as well as of the *per capita* consumption of wheat on the demand side, all have their decisive influence on market conditions.

The area under wheat cultivation for 1931 and 1932 shows a further increase; there is also a marked rise in the yields per unit of area which are considerably over the pre-war yields per hectare, although with wide fluctuations. The yields per unit for 1930 and 1931 were relatively low in consequence of unfavourable weather conditions, but the relatively good conditions of 1932 resulted in a high unitary yield. All tends to show that the increase in the unitary yields is continuing.

An increasing consumption of wheat has followed on the growth of the population, but the increase is slow in correspondence with the slowing of the increase in population figures. Owing to the varying structure of the population in the countries concerned it is impossible to forecast when, if at all, there will be a stationary condition or an absolute decline in the population.

It is not easy to obtain reliable data as to the *per capita* consumption of wheat in the countries under consideration. It is established that in nearly all the countries in question the consumption of bread grains has declined in the post-war period by from 5 to 10 per cent. In the Scandinavian countries and in

Germany this is almost entirely due to a smaller consumption of rye, while the wheat consumption has risen. In these countries an increase in the *per capita* consumption of wheat is still quite within the bounds of possibility. It is otherwise in the countries that are definitely wheat-consuming. In these, wheat consumption might perhaps in unfavourable economic conditions attain its prewar height once more, but will scarcely exceed it. On the whole it is unlikely that more than a very slight rise in the *per capita* consumption of wheat should be counted on.

In 1930 the wheat crops of industrial Europe were small, so that not only were the stocks accumulated in 1927-29 used up, but it was necessary to reckon with considerable wheat import requirements. This stimulation of the cereal markets did not last long. The calculation on the world wheat market is for a fairly considerable decline in the European wheat import requirements, in connection with which it is observed that the experience of Germany is that it has been possible to make do with a low percentage of the former wheat import while also greatly increasing areas under wheat. In the other countries efforts have been made to effect a more or less considerable modification in the import proportions by higher tariffs, milling, restrictions, etc. In this way *Germany* has nearly quintupled its duties as compared with pre-war times, and in addition since 1929 has introduced milling quotas for German wheats, the proportion of home grown wheat being fixed for the agricultural seasons 1931-32 and 1932-33 at 97 per cent. In the same way *France* also introduced by the law of 1 December 1929 the obligation to mill home grown wheats and fixed the milling quota of these wheats at 97 per cent. Later this quota was repeatedly raised and lowered, the average resulting at about 90 per cent. Subsequently a compulsory percentage of flour extraction was imposed at 66 per cent. Under the stress of the world market situation *Great Britain* gave effect to an Agricultural Marketing Act which contains decisive measures for the protection of its agriculture. On the other hand the milling quotas proposals, whereby the quota for wheats grown in the United Kingdom was to be 15 per cent., that for Empire grown wheats 50 per cent., while only 35 per cent. of the United Kingdom requirements were to be met by foreign wheats, did not become embodied in an Act. Instead early in May 1932 the Wheat Act came into force by which wheat growing in the United Kingdom is to be encouraged by means of certain subsidy payments. The original idea of enforcing an admixture of home wheats or of compulsory purchase and utilisation by the importing mills of certain quantities of home wheats was abandoned. A minimum price of 10s. per cwt. (or 45s. per quarter of 480 lbs.) is guaranteed to wheat growers for three years, *i. e.*, a standard price of double the world market price.

A guarantee against undue extension of areas under wheat is provided by a limitation of the maximum quantity of the wheat to be sold by the growers on these conditions to 6,000,000 quarters. If the supply of home grown wheat exceeds the estimate of the Wheat Commission established under the Act, then the subsidy, or "deficiency payment" will be proportionately reduced. The wheat sold by the growers must also be certified by the Commission as of millable quality.

*Norway* has a State Monopoly for export and import of cereals. In the summer of 1930 *Sweden* established a State Grain Commission for ensuring the absorption

of home grown grain by the market and for supervision of the observance of the compulsory admixture of Swedish ryes and wheats. In the *Netherlands* a law came into force on 4 July 1931 enforcing the utilisation of home grown wheats. Under this law provision has been made for a quota admixture up to 25 per cent. (originally 20 per cent.) and minimum prices have been guaranteed. In the same way in *Belgium* the improvement in wheat prices demanded by the agricultural interests led at the beginning of September 1923 to the resolution taken by the Council of Ministers that in future 10 per cent., and from 1 January 1933, 15 per cent. of home grown wheats must be used in the milling of flour for breadmaking. In *Switzerland* by the Law of July 1929 and in *Spain* by one of June 1930 the trade in wheat and wheat flour has been placed under State control and guaranteed prices as well as milling premiums have been established. *Italy*, which was always a large importing country, has made it clear by the imposition of compulsory milling of 95 per cent. of home wheat, which came into force early in July 1931, by the raising of the duty on imported wheats and the introduction of the compulsory flour extraction percentage, that a determined effort is being made to modify the position as regards imports.

The process continues by which barriers are set up by the different countries for the protection of their national production. Under the influence of the attempts thus made in nearly all the countries under consideration to detach the home market in each case from the world market, the wheat import requirements of industrial Europe must inevitably undergo gradual shrinkage, and in consequence there is still impending over the world market the immense accumulation of stocks of wheat in America. In any case, in the long run, the importance of European agriculture for the wheat supply of Europe is likely to become still greater, while that of overseas agriculture will probably decline.

### (C) POPULATION DEVELOPMENT WHEAT PRODUCTION, EXPORTATION AND CONSUMPTION IN THE PRINCIPAL OVERSEAS WHEAT EXPORTING COUNTRIES.

#### I. -- THE UNITED STATES OF AMERICA.

##### 1. -- Population Development.

The population of the United States of America has shown since 1850 the following development :

Years	Population Increase %
1850 . . . . .	—
1860 . . . . .	35.6
1870 . . . . .	22.6
1880 . . . . .	30.1
1890 . . . . .	25.5
1900 . . . . .	20.7
1910 . . . . .	21.0
1920 . . . . .	14.9
1930 . . . . .	11.5

The figures clearly illustrate the relative steep fall in the rate of population increase in America, which is the more striking as the United States is an immigration country of importance.

*Net Immigration into the United States of America (1)*

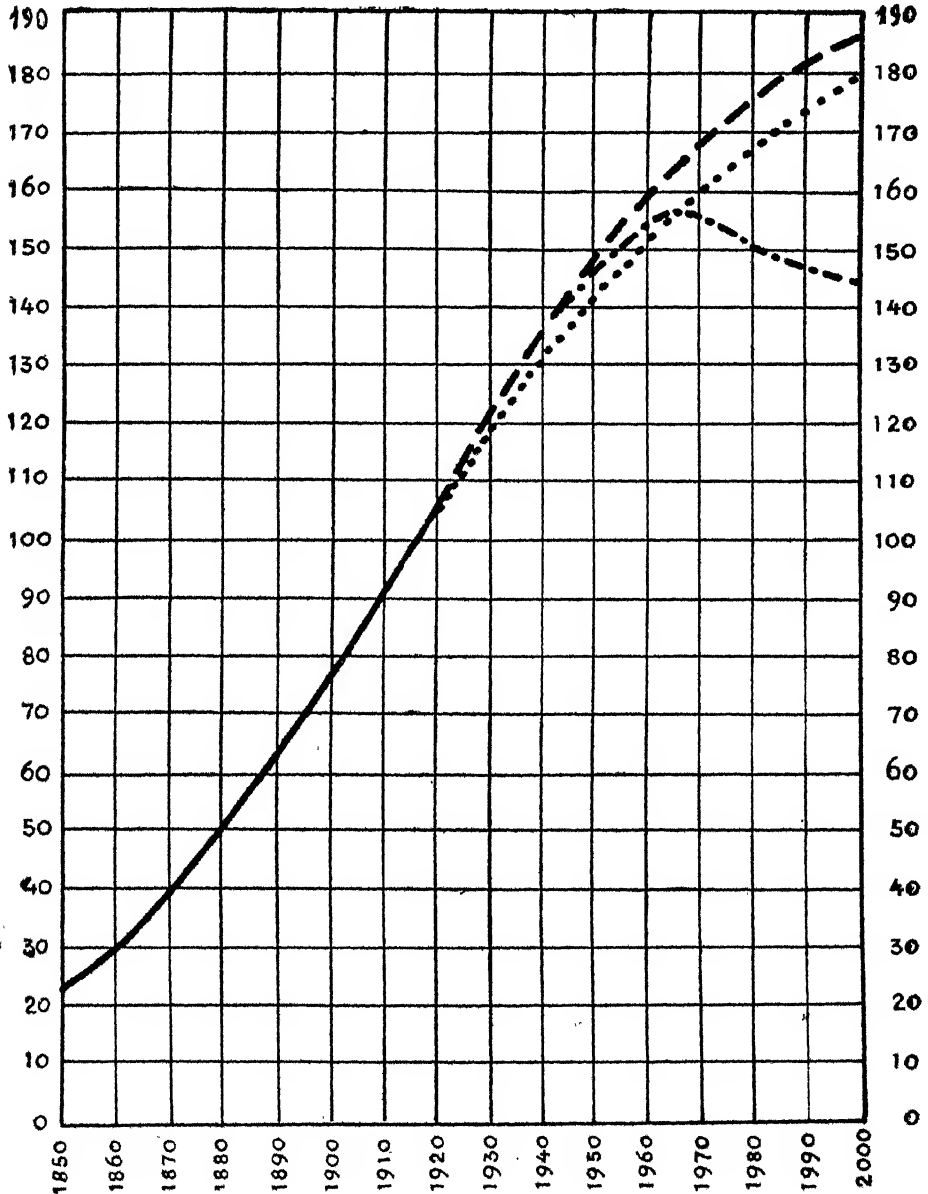
1871-1880 . . . . .	2,812,191	1919 . . . . .	141,132
1881-1890 . . . . .	5,246,613	1920 . . . . .	430,001
1891-1900 . . . . .	3,687,564	1921 . . . . .	805,228
1901-1910 . . . . .	8,795,386	1922 . . . . .	309,556
1911 . . . . .	878,587	1923 . . . . .	522,919
1912 . . . . .	838,172	1924 . . . . .	700,896
1913 . . . . .	1,197,892	1925 . . . . .	294,314
1914 . . . . .	1,218,480	1926 . . . . .	304,488
1915 . . . . .	326,700	1927 . . . . .	335,175
1916 . . . . .	298,826	1928 . . . . .	307,255
1917 . . . . .	295,403	1929 . . . . .	297,678
1918 . . . . .	110,618	1930-31 1 July-30 June (a)	93,139

(a) Gross immigration.

In the period from 1820 to 1928 about 330,000 persons yearly, or a total of 36 millions, have entered the United States as immigrants, 8.8 million of whom entered during the decade before the war. The rate of the colonisation movement remained however much behind the expansion of the land under cultivation. The transition from an agricultural to an industrial State was accomplished with surprising rapidity in the United States with the help of the immigrants. If the trends of population at the time of the turn of the century are considered more in detail, it will be seen that in spite of the high immigration figures the rate of increase, after showing certain signs of "fatigue", was from 1908 decidedly slackening (see Graph IIIa). Thus here too is found a continuous decline in the birth rate, and in 1927 the proportion is only 2.2 children to a marriage. The tendency to decline in births is likely to be in the future much stronger in the States than in Europe, on account of the marked shrinkage in the immigration. For a change of world importance has been achieved in the United States without attracting attention; for the first time according to official records the tide of immigration has turned; that is to say, more persons leave the United States than come into the country. This is due less to the immigration laws of 1924 than to the strictness with which these have been enforced since 1931. The Immigration Commissioner states that since the War of Secession the number of immigrants has never been so small as in the census year 1930-31, in which only 93,139

*The Population of the United States, 1850-1920 and estimates of population, 1930-2000 (\*)*

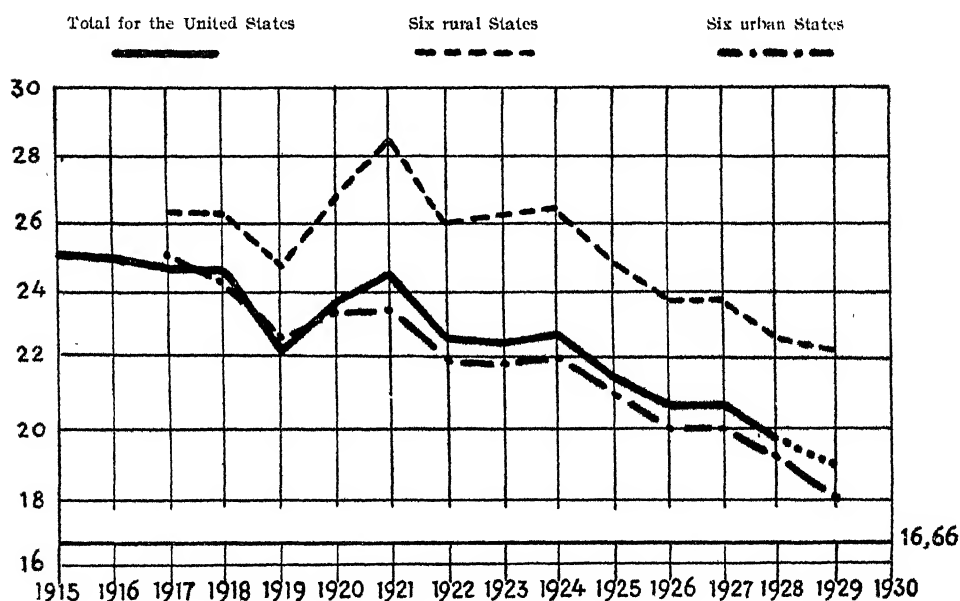
Based on estimates made by Pearl and Reed John Hopkins University	According to methods proposed by Sloom, Bureau of the Census	Established on the basis of the present births, immigration and of expectation of life of 60 years	Millions
— — — — —	• • • • •	- - - - -	



(\*) O. E. BAKER: "The Outlook for land utilization in the United States".

persons were admitted into the United States, or about one third less than the number officially sanctioned. In addition the Government on the basis of an obsolete clause of the immigration law paid for the return journey of such foreigners who were lawfully in the country, but who were anxious to avoid permanent unemployment in America by return to their own country. Care was taken that, by notices in American newspapers published in foreign languages, this readiness to pay the journeys was widely known. Such return cannot but have an effect on the birth rate, as the immigrants mainly come from countries and

*Birthrate per 1000 of the Population of the United States  
for 1915-1928 in six Urban States, and for 1917-1928 in six Rural States (1).*



N.B. — 16,66 = the birthrate necessary for the maintenance of the present population.

from social strata where the number of children per household is large (see Graph III a). They were and still are those who raise the average of size of families, while the older settlers have long made the transition to restriction of births. Now that the immigration has been reduced to a minimum this impetus is wanting. The first generation diminishes from year to year in numbers, and the second is already Americanised in respect of the size of the family. There is here no distinction between town and country. The development is the same in both (see graph as above).

A particularly rapid fall in the already low birthrate need thus occasion no surprise. As a matter of fact the birth rate in the eight years before 1930 fell from

(1) O. E. BAKER, *The outlook for land utilisation in the United States*.



23.7 to 19.7 per thousand. Since the fall in the death rate over the same period was less, the rate in fact having remained the same since 1920, there is a decline in the natural increase of population from 10.6 per thousand in 1920 to 7.3 in 1928. On the other hand the American manufacturing industries have so increased their outturn capacity as to outrun the absorption capacity of the home markets at the present time by 10 to 50 per cent. It is evident that a country the industry of which is organised on the assumption of a population increasing each decade by about 20 per cent. is exposed to disastrous consequences if there is a complete reversal of the tendency.

## 2. — The Development of Wheat Production.

### (a) *Development of Areas under Wheat Cultivation.*

Towards the close of last century the United States gradually ceased to be a country peculiarly fitted for agricultural colonisation. Its economic and social constitution alike were undergoing a process of transformation, and this contributed to the rapid surmounting of the depression of wheat prices in the seventies. In fact wheat prices rose as rapidly again. The population, of which a growing proportion was urban and industrial, increased more quickly than did the areas under cultivation, so that the cultivable area available per head of population became gradually smaller. Since the "last west" was opened up and the immigration came, speaking generally, to a standstill, the United States have definitely lost their character as a country for large scale agricultural settlement. No further growth by territorial accessions is now possible. Economic conditions force American agriculture to adapt itself increasingly to the requirements of the industrial States, and compel the transition from "ranching" to farming proper. Whereas at the time of colonial expansion the settlers on the prairie lands preferred wheat growing to any other kind of farming, because no other production required so little capital and brought so speedy a return to the farmer, from the nineties up to the year 1909 an absolute and especially a relative decline in wheat cultivation took place. From 1910 to 1913 however it slowly increased again, and after the outbreak of war in consequence of the rise in prices there was a very considerable increase up to 1915. In 1915-16 this great expansion of cultivation suddenly brought about an absolute and especially a relative fall in prices, followed by an equally sudden restriction of areas due to the effects of the world war, the result being that in 1917 the extent of the areas under wheat was again reduced to nearly that of 1909. The conclusion of the war moreover brought a reversion to the exclusive wheat production characteristic of the years of colonisation. Stimulated by wheat prices that were both absolutely and relatively enormously high (Graph V) and by the apparently extraordinarily favourable marketing conditions in Europe due to the great demand for commodities, the areas under wheat cultivation underwent an immense expansion; from 1917 to 1919 there was an extension by about 12 million hectares, or 70 per cent. This expansion was confined to the so-called Western States, but the end was already in sight. Wheat-growing cannot be carried on where

the vegetative period is less than 90 days, or the precipitation under 350 mm., in fact the crop is very uncertain if the precipitation is only 350 mm. It also becomes impossible in a warm damp climate that favours the appearance of cryptogamic growths (1). The onset of the agricultural crisis compelled the American farmer to change his policy. Under the influence of the falling wheat prices from the middle of 1920 onwards and of comparatively high prices for live stock products there was again a considerable decline in wheat cultivation which in 1924 was once more in the position of 1914 or 1916, *i. e.*, it had been necessary to place about 9.5 million hectares under other crops. This was also the position in 1925. This was followed by a renewed expansion, under the stimulus of absolutely and relatively encouraging wheat prices due to the stabilisation of currencies in Europe, and of the contemporary fall in production costs in consequence of the advances in mechanisation. The cultivation was even pushed further into the arid zones of the western provinces. This movement however came to an end in 1929 with a wheat area only about that of 1915. A further decline followed under the influence of the disastrously low world wheat prices. Wheat growing in the United States seems likely to show this declining tendency for some time.

In regard to the wheat areas per head of the American population, from 1900 to 1912 there was a decline amounting to about 33 per cent. owing to the large increase in the population and the adaptation of agriculture to the progressive industrialisation; under the influence of the world war up to 1915 the position in 1903 was regained, followed by a sudden fall to a minimum in 1917. Towards the end of the war a still more rapid expansion took place up to 1919, followed by an equally rapid shrinkage in consequence of the agricultural crisis, so that in 1925 the wheat area per head reached a minimum. It again increased somewhat up to 1927, but in 1930 began once more to decline, a tendency which will probably continue.

The apparent area under cultivation is however in no way identical with the areas harvested, as a more or less large percentage of the areas sown suffer from the effects of the winter, of drought or of hail, or are destroyed by floods, by insect pests or otherwise. If the ratio between areas harvested and areas sown (see Graph III a) be noted, it is clear that this ratio becomes more unfavourable as wheat production is carried further west. In particular the spring wheat in the western arid zones suffers to a greater or less extent every year, so that the area harvested is often quite considerably less than that sown.

#### (b) *Development of Unitary Yields.*

Before the war yields per unit of area showed considerable increase, continuing till 1915, although with extraordinarily wide fluctuations (see Graph III a). The large rise in this yield in the years 1912-1915, which occurred in spite of

(1) According to data supplied by Prof. Th. BRINKMANN, Bonn.

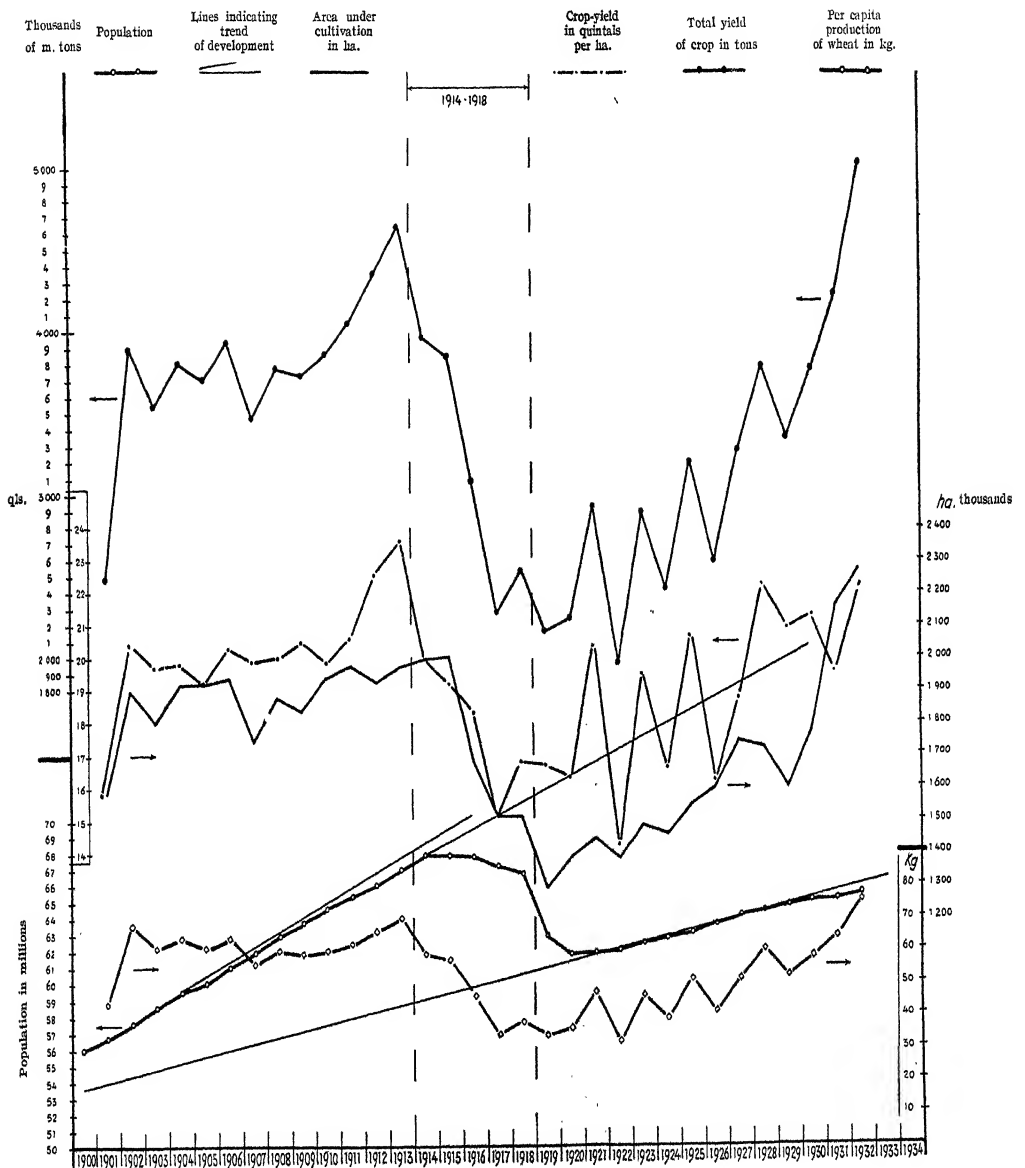
the expansion of the areas under wheat, is probably to be ascribed almost entirely to the exceptionally good weather conditions. A decline of 45 per cent. followed, in spite of a shrinkage in wheat growing, and this was again followed, under the influence of crop rotation, by a marked rise up to 1918. The subsequent extension of wheat cultivation took place at the expense of yields per unit, which fell extraordinarily low in 1923, but show a tendency to rise with the gradual shrinking of the cultivation. From 1924 onwards with the expansion of cultivation there was a decrease in yields, although with considerable fluctuations; both these tendencies were reversed from 1929, but in 1932 owing to very unfavourable weather conditions there was again a decided decline in yields.

In the United States there is moreover always a certain balance between the winter and the spring wheats, whereby a deficiency of the one crop is compensated for as a rule by a high yield from the other (see under Section 7).

(c) *Development of the Aggregate Wheat Production.*

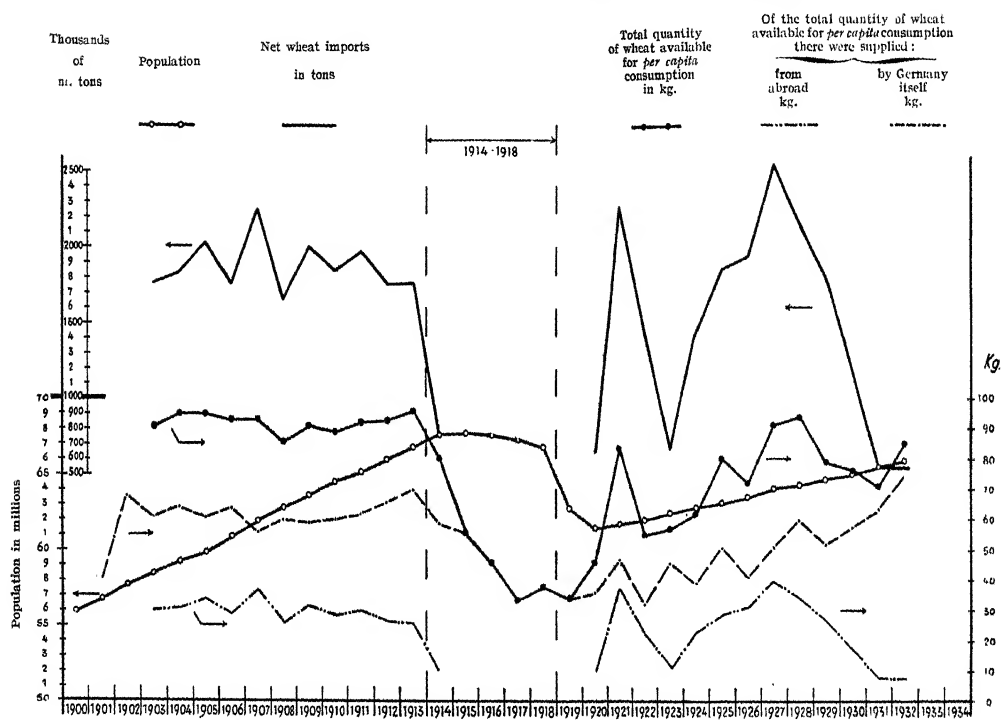
Corresponding to the fluctuations of the areas cultivated or harvested and to the very high fluctuations of the yield per hectare there was also considerable variation in the quantities harvested in the pre-war years up to 1911, but the average remained at about 17.5 million tons. Then in consequence of the increase in areas together with the rising yields per unit there was a considerable increase in quantities harvested up to 1915. In 1916 in consequence of the limitation of wheat areas and disastrously low yields there was an equally abrupt fall in production. The yield per unit of 1916 was the lowest since 1900. A further decrease in areas cultivated was accompanied by rising yields with the result that the total quantity harvested for 1917 was equivalent to that for 1916. Towards the end of the war there was a large expansion of the area under wheat, reaching a record extension in 1919. The quantity harvested however increased much less markedly as with the extension the yields per unit of area declined. When in consequence of the agricultural crisis the areas under wheat had to be again much diminished, the yields per unit did not, it is true, increase in any corresponding measure, but in spite of this the total quantity harvested remained about 30 per cent. larger than in pre-war times. Just when areas had nearly gone back to the pre-war position, a decided rise in the yields per unit was noticeable. From then onwards, with the exception of 1925, when crop failure was experienced, areas cultivated or rather harvested and yields per unit moved almost regularly in opposite directions, so that the fluctuations of the aggregate quantities obtained were relatively small. Taking the average of the years 1920-1931 the wheat production of the United States has been maintained almost uniformly, with the exception of 1929, at a level of about 23 million tons. In 1932 with its unfavourable weather conditions, there was a deficiency of 15 per cent. as compared with the average and of 20 per cent. as compared with 1931.

GRAPH I-a. — *Wheat production and Population Development in Germany.*



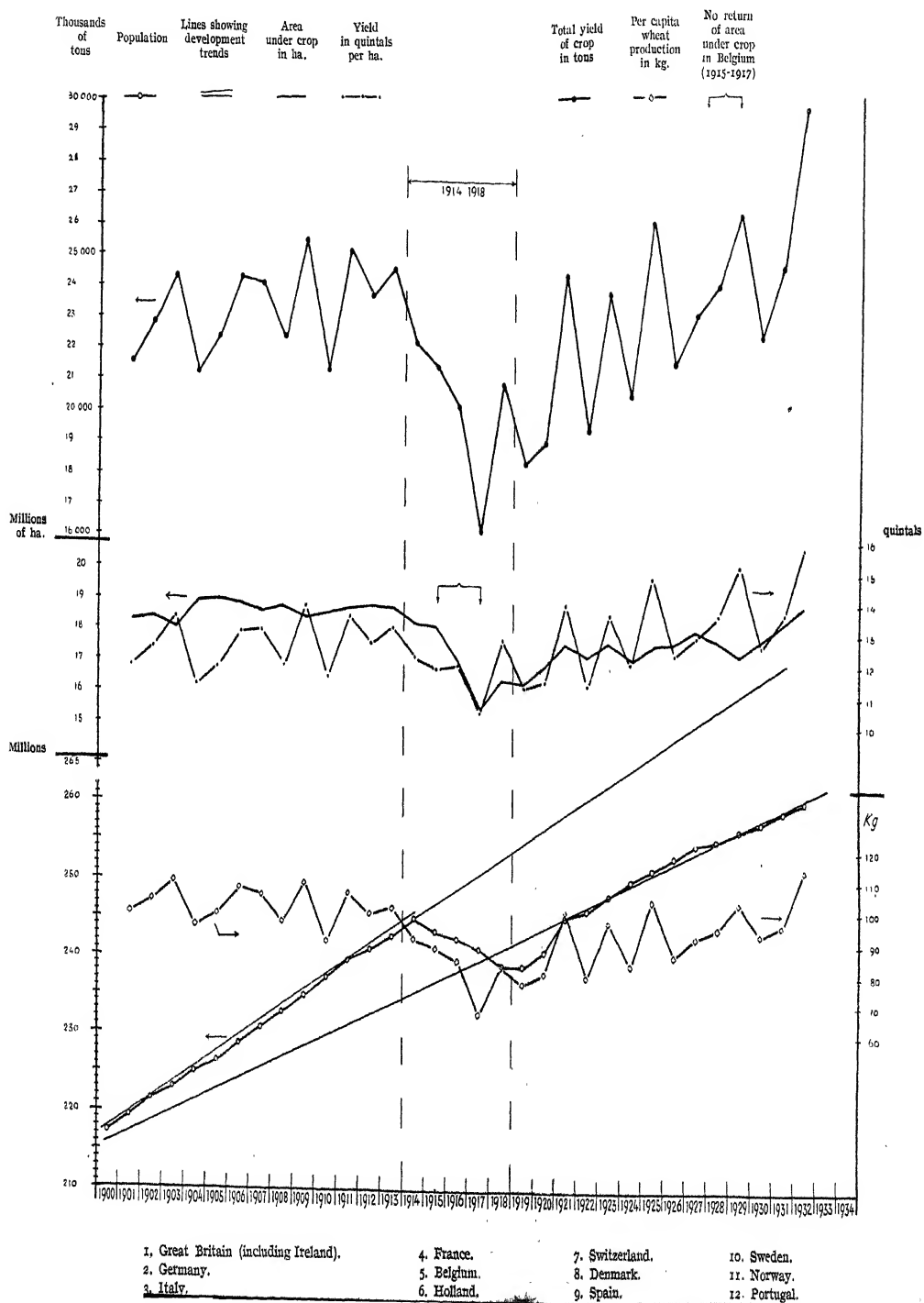


GRAPH I-b. — *Population, wheat importation and consumption in Germany.*





GRAPH II-a. — *Wheat Production and Population Development in the principal European wheat importing countries.*

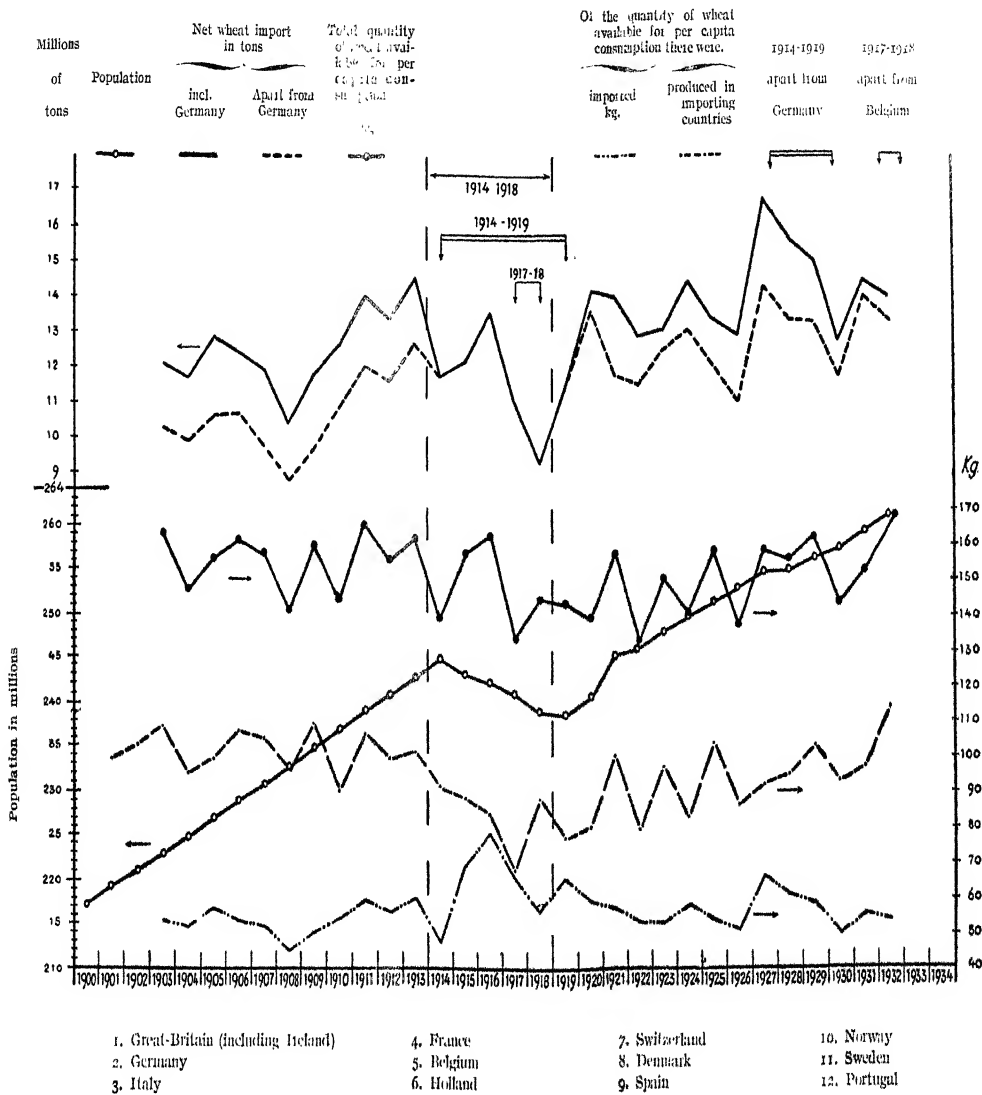




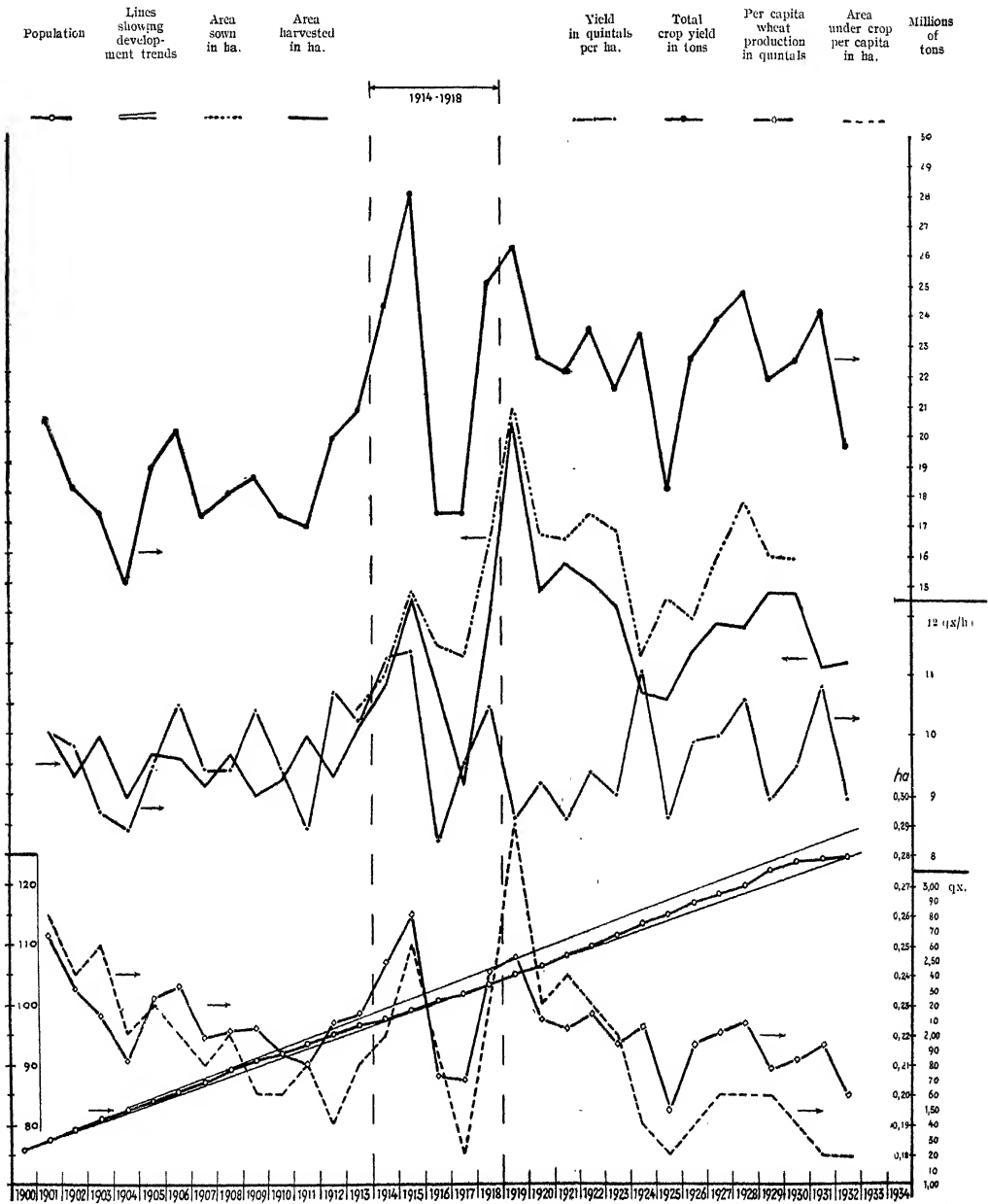




GRAPH II-b. — *Population, Wheat Importation and Consumption in the principal European wheat-importing countries.*



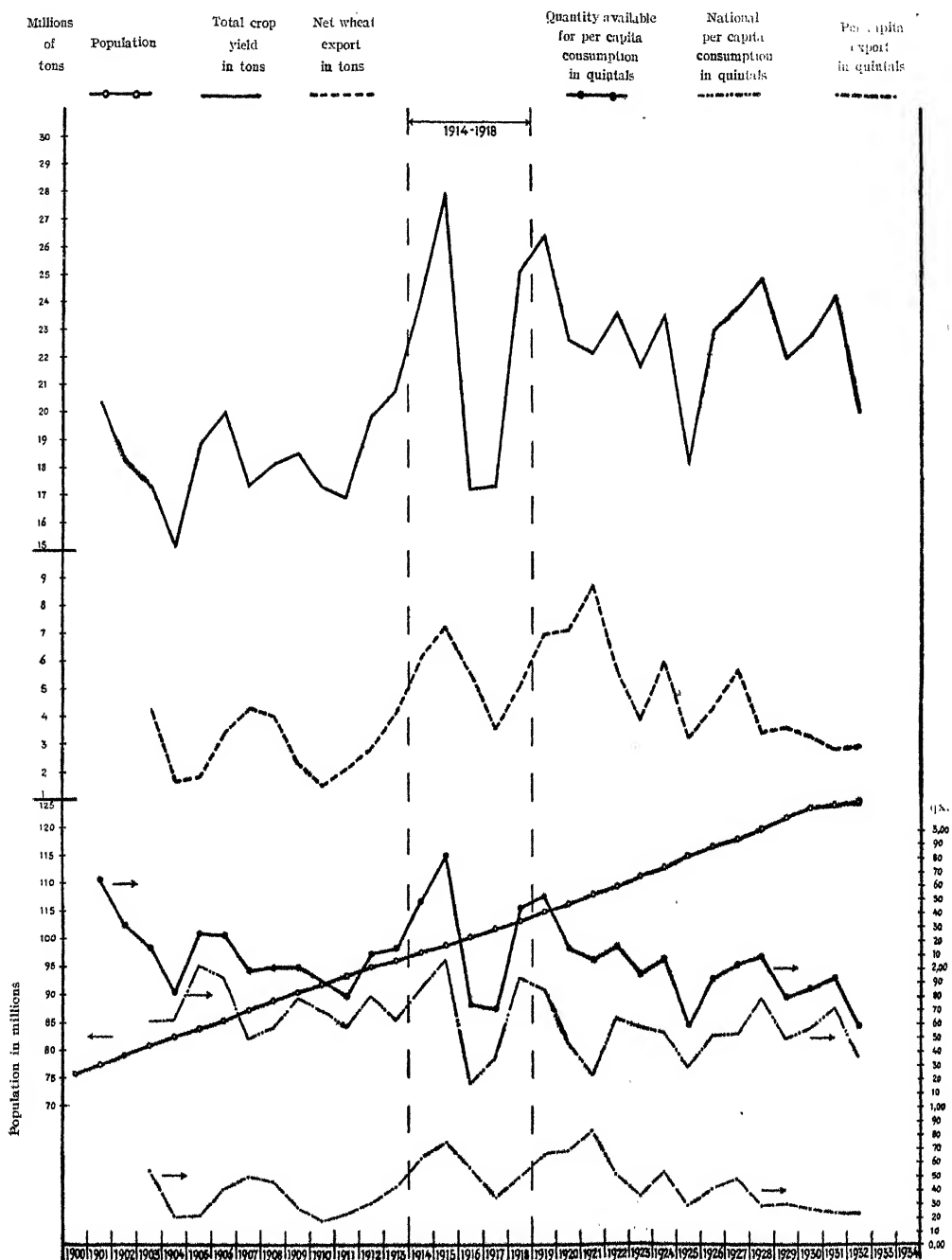
GRAPH III-a. — *Wheat Production and Population Development in the United States of America.*



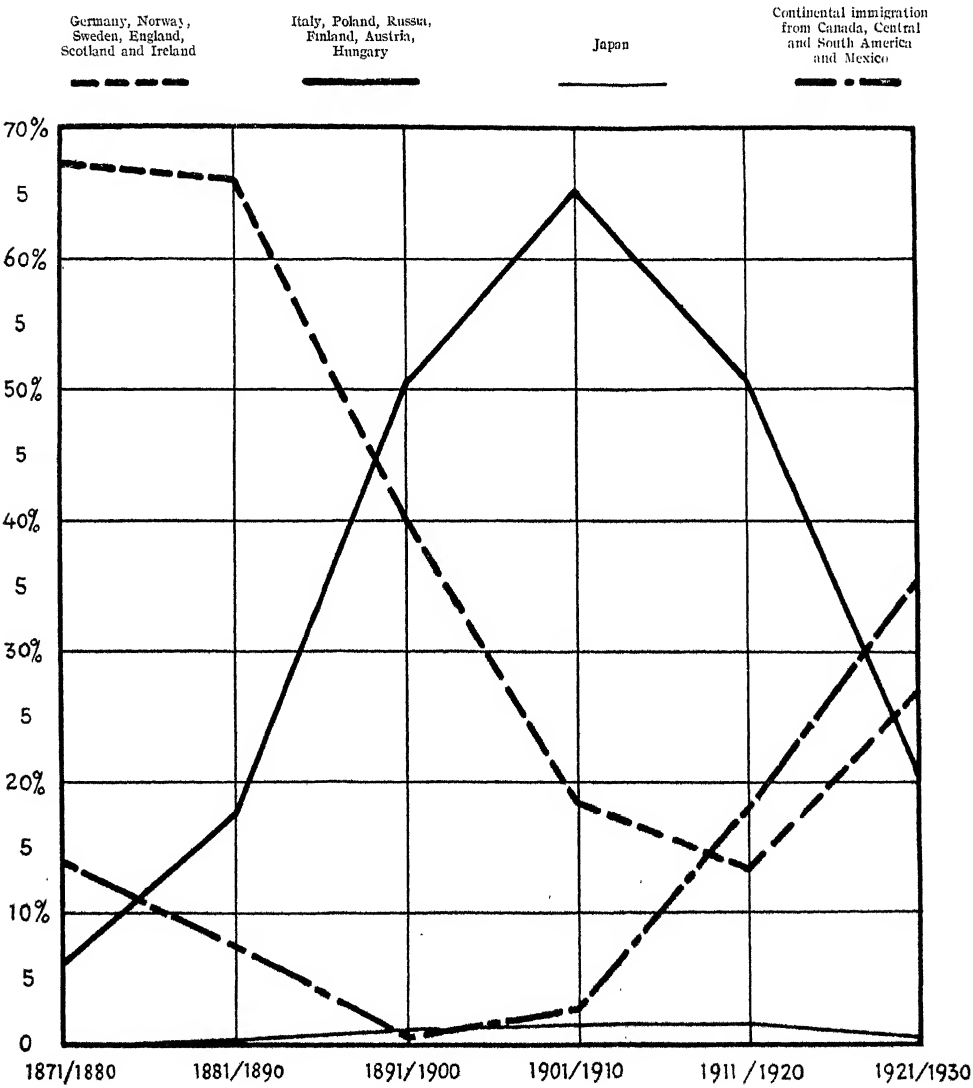




GRAPH III-b. — *Population, Wheat Exportation and Consumption in the United States of America.*



GRAPH III-c. — Immigration into the United States grouped by countries of origin from 1871-70 to 1921-30 (\*)

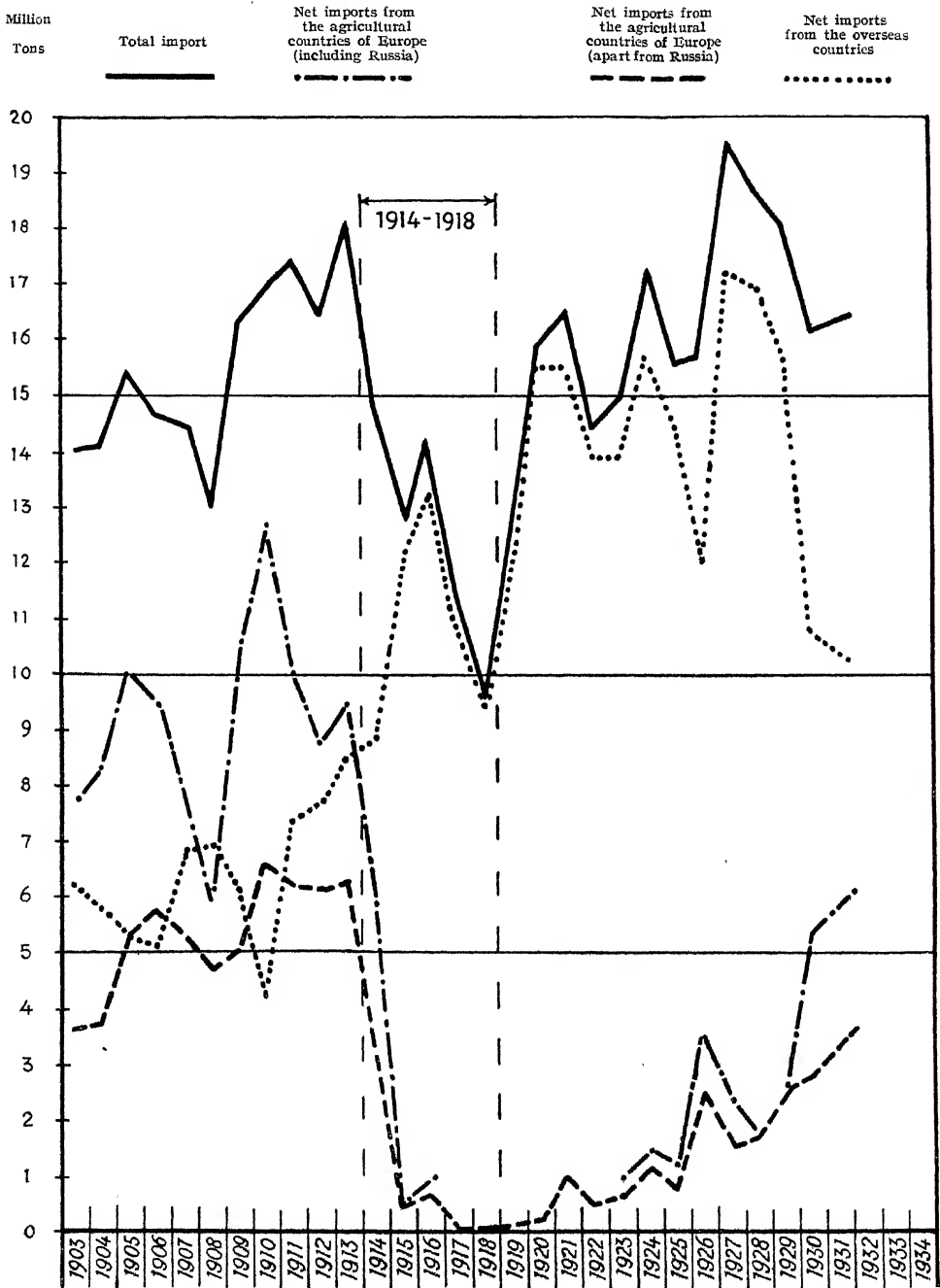


(\*) According to the "Statistical Abstract".



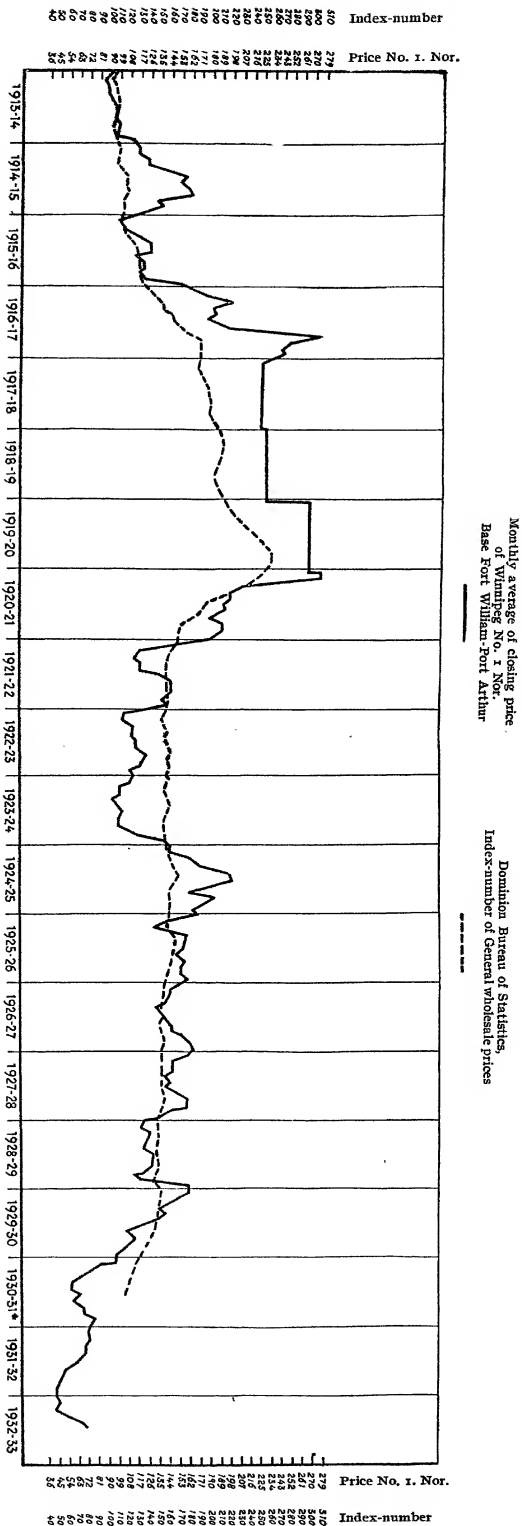


GRAPH IV. — *The wheat Imports of Industrial Europe and their origin.*





GRAPH V. — *Winnipeg No. 1 Northern Wheat and Index-number of General Wholesale Prices.*



\* From August 1931 Chicago futures price (Report of the Commission on Trading in Grain Futures, 1931).

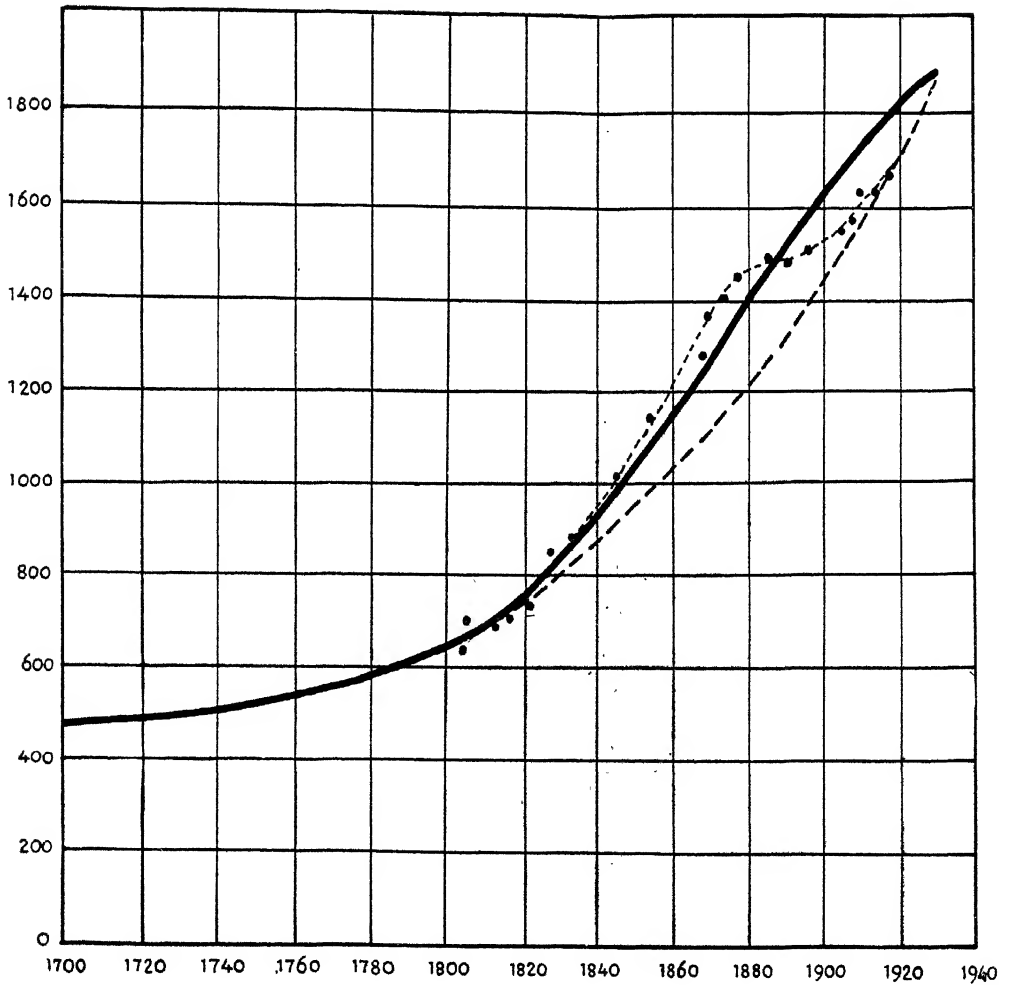


GRAPH VI. — *The Population of the World, 1700-1924 (\*)*.

Millions  
of inhabitants

Population of the World

Increase on basis of present  
birth rate



(\*) O. E. BAKER: "The Outlook for land utilization in the United States".







## 4. — The Net Wheat Export.

The net export of wheat from the United States shows, in correspondence with the result of the home crops, very marked fluctuations. It had passed its highest point at the turn of the century and up to 1904 declined considerably. In the following years in consequence of large crops there was an advance in the wheat export which in 1907 again reached the figure for 1903. An equally marked decline occurred in the following years, so that in 1910 a very low figure was reached. Under the influence of the great increase in wheat production which began at this time there was again a large additional export which in 1915 amounted to 1.7 times the export figure of 1903 or 1907 and about 5 times that of 1904 or 1910. With the fall in wheat production already mentioned as due to the effects of the war there was up to 1917 again a decline in the export figures, although the diminution is not in any way so great as might have been expected from the decrease in wheat production, the fact being that the large stocks from the years 1914-15 were pressing on the market. With the renewed expansion of wheat production in the years 1918-19 an advance in the export was again noticeable, and in 1921 a record height of nearly 9 million tons was reached, nearly three times the average export figure of the last pre-war decade and six times the export of the years 1907-1911. Owing however to the onset of the agricultural crisis and of the protection measures taken by the importing countries the wheat export then experienced a very marked decline, although with fluctuations, so that in the years 1928 to 1932 it had fallen almost to the average pre-war export, *i. e.*, by about 60 per cent.

The following table makes the development clear:

*Wheat Production and Wheat Export on a Comparative Basis.*

Period	Wheat production	Wheat export	Proportion of export to production %
1903-07 . . . . .	100	100	18
1908-12 . . . . .	103	85	15
1913-17 . . . . .	122	123	25
1918-22 . . . . .	135	218	28
1923-27 . . . . .	124	154	22
1928-31 . . . . .	132	109	14

These figures well illustrate the efforts made by the Americans to place increasingly larger quantities of their wheat on the world market, and so balance the lower returns due to lower prices by means of a larger export. The figures for 1928-31 show the disastrous effect on the American wheat export of the efforts made by the European importing countries for self-sufficiency.

5. — The *per capita* Wheat Export.

The wheat export per head of population shows the same fluctuations as the total export, although to a considerably less marked extent. The *per capita* wheat export up to 1922 showed continuous increase, but then began to decline and in 1928-30 again reached the lowest point of the pre-war position. The following table shows the movement:

*Course of the per capita wheat production, wheat export and wheat consumption on a comparative basis.*

Period	Production	Wheat Export <i>per capita</i>	Consumption
1903-07 . . . . .	100	100	100
1908-12 . . . . .	94	78	97
1913-17 . . . . .	101	146	92
1918-22 . . . . .	107	170	93
1923-27 . . . . .	91	114	85
1928-30 . . . . .	90	78	93
1931-32 . . . . .	84	66	88

6. — The *per capita* Wheat Consumption.

The *per capita* wheat consumption up to 1907 showed a tendency to decline, but afterwards slowly rose up to 1915. In 1916 there was a sharper decline followed up to 1918 by nearly as sharp a rise. Then the consumption of wheat began to decline slowly till 1925, with interruption only in 1922, the decline amounting to 15 per cent. as compared with the five year period 1903-1907. In 1926, when the protection measures began in the importing countries and marketing became in consequence more difficult, there was once more an apparent increase in home consumption of wheat, but here the case is not one of actual increase in consumption as this quantity includes also the large warehoused stocks of wheat, which do not come on the world market and still await disposal.

*Wheat Stocks in United States of America  
on 1 August of the respective years.*

Year Aug. 1st	In 1000 quintals
1925 . . . . .	31,800
1926 . . . . .	27,200
1927 . . . . .	32,400
1928 . . . . .	34,600
1929 . . . . .	66,700
1930 . . . . .	80,600
1931 . . . . .	90,900
1932 . . . . .	103,100

In the prevailing conditions it is probable that this tendency has not yet reached its end ; and will not, unless the wheat production of America is considerably reduced, or a poor harvest brings about a natural diminution of production and thereupon the stocks are drawn on for meeting the demand. The development of consumption from 1903 to 1930 in five year periods has been shown. As compared with the decade 1903 to 1913 the *per capita* wheat consumption in the decade 1920-30 declined by 12 per cent.

## 7. — Outlook.

It is impossible to foretell the direction in which the conditions on the American wheat market will in future develop, since on the supply side extension of cultivation, increase in yields, crop returns and export facilities represent the factors, while on the demand side these are to be found in the rise, stationary position or fall of the population figures, as well as in the *per capita* consumption of wheat. The degree to which any of these would take effect and the direction of any such effect are alike beyond calculation.

Under pressure of the low world prices a further limitation of the areas under wheat in America is very probable. In addition a natural reduction might occur in unfavourable years, in particular from want of rain in the case of the spring wheat cultivation which has been pushed on in the western arid zones. On the other hand there is a not inconsiderable rise in the areas under winter wheat, so that the deficiency of the one crop might be balanced by a higher yield from the other.

A larger consumption of wheat in consequence of the growth of the population is certainly to be expected, but the rate of such increase in consumption is slower every year, and any additional increase in population depends essentially on immigration.

It is not easy either to obtain reliable figures on the consumption of wheat *per capita* of the population. It is estimated that it has fallen as compared with the pre-war time by about 15 per cent. It is not improbable that this is increasing owing to the unfavourable economic conditions ; but it is difficult to form a judgment in this respect.

The estimates of the Department of Agriculture for the United States wheat harvest of 1932 were :

on 1 July 1932 . . . . .	20.06 million tons
on 1 August 1932 . . . . .	19.68 million tons

and for wheat stocks carried over from 1931 over 10 million tons. The average internal demand of the States for wheat was reckoned at about 18 million tons, so that about 12 million tons were left for export. Under the pressure of these huge stocks the quotations for wheat have gone down to a point not before reached. The position of the American farmer is practically desperate, especially in view of the general economic depression.

## II. --- CANADA.

## I. -- Population Development.

Canada is definitely a settler's country. The growth of its population has accordingly been to a great extent dependent on immigration.

*Number of Immigrant Arrivals in Canada (1).*

Decade or year	Number of immigrants	Year	Number of immigrants
1871-1880 . . . . .	--	1919 . . . . .	57,702
1881-1890 . . . . .	886,300	1920 . . . . .	117,336
1891-1900 . . . . .	321,200	1921 . . . . .	148,477
1901-1910 . . . . .	1,453,500	1922 . . . . .	89,999
1911 . . . . .	311,084	1932 . . . . .	72,887
1912 . . . . .	354,237	1924 . . . . .	148,560
1913 . . . . .	402,423	1925 . . . . .	111,362
1914 . . . . .	384,878	1926 . . . . .	96,064
1915 . . . . .	144,789	1927 . . . . .	143,991
1916 . . . . .	48,537	1928 . . . . .	151,597
1917 . . . . .	75,374	1929 . . . . .	167,722
1918 . . . . .	79,074	1930 . . . . .	163,288

A comparison of the above table with the population development gives a clear indication of the influence of immigration. From 1900 to 1931 Canada has doubled her population, the total increase being almost entirely accounted for by the stream of immigrants that poured into the Western Provinces. The growth of the population is characterised by an extraordinary irregularity; a marked slowing down of the increase is however noticeable, which may all the sooner bring about a stationary condition of population from the fact that immigration has considerably declined. Urbanisation of the population has led to a marked change in composition and takes further effect in a declining birth rate. Although it is not impossible that settlement of the country may still proceed and there are in fact still large areas of land not yet taken up and suitable for wheat growing, economic conditions and the course of development of population in the emigration countries make any settlement, at all comparable to what has hitherto gone on, very far from probable.

## 2. — The Development of Wheat Production.

### (a) *Development of Areas under Wheat Cultivation.*

The area under wheat in Canada has increased between the years 1901 and 1921 with a certain regularity from 1.6 to 9.4 million hectares (3.95 to 23.23 million acres), *i. e.*, has been sextupled in the period. The immense extension of cultivation coincides with the opening up and settlement of the Prairie Provinces. The further extension of the wheat area has in the meantime reached its natural and economic limits; the westwards movement of the Canadian farmer has come to a standstill. During the years 1921 to 1928 there was no further expansion of wheat growing. From 1928, however, extension began anew, mainly on land which had already been taken up by earlier settlers. This increase of wheat growing was promoted by mechanisation, as shown by the following table:

*Sale of Agricultural Machinery  
in the three Western Provinces of Canada (1).*

Year	Tractors	Threshers	Combines
1924. . . . .	2,112	—	—
1925. . . . .	4,053	—	—
1926. . . . .	6,513	—	176
1927. . . . .	10,026	—	598
1928. . . . .	17,143	6,247	3,657
1929. . . . .	14,557	2,095	3,500
1930. . . . .	8,611	2,034	1,614

*Distribution of Machine Sales in the Provinces 1930.*

Manitoba . . . . .	1,541	379	134
Saskatchewan . . . . .	4,350	829	939
Alberta . . . . .	2,720	826	541

It is however unlikely that this extension will be on any large scale, since with the low prices the high costs of production make wheat growing unremunerative. On the whole the difficulties are in any case so great that a rapid expansion of wheat growing cannot be anticipated.

(1) Board of Trade Journal, 12 Feb. 1931.

*Wheat Cultivation in Canada.*

Years	Area under wheat 1000 ha.	Yield par ha quintals	Production 1000 quintals
Average 1909-13 . . . . .	4,020	13.3	53,600
1923 . . . . .	8,860	14.6	129,100
1924 . . . . .	8,930	8.0	71,300
1925 . . . . .	8,410	12.8	107,600
1926 . . . . .	9,270	12.0	110,800
1927 . . . . .	9,090	14.4	130,500
1928 . . . . .	9,760	15.8	154,200
1929 . . . . .	10,220	8.1	82,900
1930 . . . . .	10,080	11.4	114,500
1931 . . . . .	10,600	8.3	87,500
1932 . . . . .	11,100	10.6	116,600

*(b) Development of Unitary Yields.*

While the expansion of wheat growing through extension of area was going on, the unitary yields between the years 1900 and 1910 showed a marked decline, although with considerable fluctuations. This tendency was however definitely checked by the introduction of the new Marquis wheats and the summer fallow of 1910. From that year there was for the time being a steady rise in yields per acre, and in 1915 a record yield was obtained. From 1915 with the further expansion of wheat areas the unitary yield again declined rapidly to a minimum of 6.8 quintals per hectare (5 bushels per acre) only in 1919. Although in 1921 the expansion came to an end and mixed farming was being substituted for wheat-growing, the post-war average yields per acre did not reach the pre-war level. The peak yields of the pre-war period were reached only in the years 1923, 1927 and 1928, in the other years the yields fell far below the lowest pre-war yields. In the years 1929 and 1931 large areas were ruined by unfavourable weather and on the remaining areas the yields were very low. Although a series of good seasons had been favourable to the westward extension of wheat growing, a succession of several unfavourable seasons led to the cultivation being abandoned over wide areas.

*(c) Development of Aggregate Wheat Production.*

At the beginning of the century there was at first a slow but increasingly marked rise in the total annual wheat production, but following on a record production in 1915 the rising tendency abruptly ceased. After the war in consequence of unfavourable weather conditions the production fluctuated between wide limits and for the period 1919 to 1932 the average was 10 million tons only. Speaking generally there has been a slight diminution in wheat production since 1923.

### 3. — Wheat Area and Wheat Production *per capita*.

The population increase has not been able to keep pace with the immense expansion of the wheat growing areas and with the increase in production.

Whereas the population increase from 1900 to 1921 was only about 69 per cent., the *per capita* quota of the wheat areas rose by nearly 2.6 times. After 1921 the increase in area rose only in proportion with the population, so that the *per capita* quota of area remained constant. This tendency may possibly be maintained in the future, unless the wheat growing areas undergo reduction owing to transition to other crops or to mixed farming.

The per capita quota of wheat production was characterised by the same movement, although with marked fluctuations. Since in the post-war period the unitary yields declined with the exception of three specially favourable years, wheat production per head of population also showed a slight decline. This however makes no difference to the fact that in the eleven year pre-war period (1903 to 1913) the wheat production per head of the population was only 5.84 quintals (about 23 bushels) while on the other hand in the eleven year post-war period (1920-31) it was 11.23 quintals (nearly 45 bushels) and has thus nearly doubled. In the future *per capita* wheat production may show a declining tendency for the reasons mentioned, unless the expected rise in unitary yields resulting from a certain intensification may prevent this tendency from becoming too pronounced.

### 4. — The Net Wheat Export.

The wheat export of Canada became multiplied nearly twelve times between 1903 and 1928; Canada has become one of the leading wheat exporting countries of the world. At the same time the rate of increase of wheat exportable surpluses which are placed on the world market by Canada is more rapid than that of Canadian production. The rise in wheat production in the post war decade 1921-31 was 2.8 times as great as that of the pre-war decade 1903-13, while the proportion of the wheat export to the production rose for these periods 43 per cent. in the earlier and 68 per cent. in the later. The export surplus fluctuates of course as the result of the greatly fluctuating crop returns, the consequence of the variable continental climate. In spite of the serious market situation on the world market Canada has succeeded in maintaining up to 1931 the high export quota even in years when the crops were poor and the export quantities accordingly low. Since 1929 the export has been falling slowly but continuously.

### 5. — The *per capita* Wheat Export.

As has been seen the *per capita* wheat production doubled in the post-war decade 1921-31 as compared with the pre-war decade 1903-13. Since the population of Canada cannot itself consume these immense quantities of wheat, they

must be placed upon the world market or warehoused. Although there are large warehousing facilities in Canada, the alternative course has been mainly taken and the wheat surpluses thrown upon the world market. While the *per capita* export surpluses, for the reasons already given, fluctuate considerably, the wheat export per head in the decade 1903-13 was trebled during the decade 1921-31.

#### 6. — The *per capita* Wheat Consumption.

No clear idea of the actual wheat consumption can be gained from the quantities available for consumption as established by the statistics, since in the first place there is a discrepancy between the crop year and the export year and secondly in consequence of the great variations in the crop returns larger stocks are being held. In the pre-war decade 1903-13 the *per capita* wheat quota amounted on an average to 3.33 quintals (12.26 bushels), in the post war decade 1921-31, taking into account the large quantities in store, to 3.67 quintals (13.48 bushels). The actual consumption of wheat in Canada per head of population has dropped by about 10 per cent. as compared with the pre-war years, so that a *per capita* quota of about 3.0 quintals (11.02 bushels) only may be reckoned.

The apparently high internal consumption of 1932 would seem to be due to the great accumulation of invisible wheat stocks which cannot be placed on the world market.

#### 7. — Outlook.

If the conditions of Canadian wheat growing are considered, a very gloomy picture emerges. The extraordinary advance in cultivation in conjunction with the erection of barriers by the former consuming countries has led to a disastrous crisis in marketing, whereby the world market is depressed by the huge stocks in store. In consequence of the relatively large harvests of the years 1925, 1926 and 1927 as well as of the bumper record crop of 1928, there was so heavy an increase in wheat stocks in Canada that the wheat pool collapsed under the strain, the financial loss of this body from the harvest of 1928-29 alone being estimated at 25 million dollars.

#### *Wheat Stocks in Canada.*

Year Aug. 1st.	In 1,000 quintals
1925 . . . . .	8,200
1926 . . . . .	10,900
1927 . . . . .	14,400
1928 . . . . .	25,000
1929 . . . . .	34,600
1930 . . . . .	34,600
1931 . . . . .	38,000
1932 . . . . .	37,000



Although in the last few years the stocks have not been allowed to increase to any considerable extent, with an internal consumption of 3 million tons nearly the entire harvest of the 1932 season remains free for export. The present world crop prospects and the estimates of the probable requirements of the consuming countries point to still lower wheat prices.

### III. — ARGENTINA.

#### I. — Population Development.

Argentina is definitely a settlers' country. The population has not increased to the extent anticipated, and from 1853 to 1903 the advance was from about one million to five millions only. Subsequently the population increased by immigration somewhat more rapidly, and in 1914 reached nearly 7.9 millions. Immigration was brought to a standstill by the war, and a nearly stationary position of the population ensued, the emigration even exceeding the immigration in the years 1914 to 1918.

#### *Net Immigration into Argentina (1).*

Decade or year	Number of immigrants	Year	Number of immigrants
1871-1880 . . . . .	275,900	1920	35,000
1881-1890 . . . . .	854,900	1921	59,000
1891-1900 . . . . .	396,600	1922	88,000
1901-1910 . . . . .	1,177,400	1923	156,000
1911 . . . . .	109,600	1924	116,000
1912 . . . . .	206,100	1925	75,000
1913 . . . . .	145,400	1926	90,000
1914 . . . . .	61,000	1927	104,148
1915 . . . . .	65,300	1928	75,239
1916 . . . . .	46,700	1929	66,111
1917 . . . . .	32,300	1930	64,272
1918 . . . . .	9,200	1931	2,656
1919 . . . . .	2,200	—	—

There was a gradual resumption of immigration from 1919, but in 1923 and 1924 the numbers of immigrants were so large as to make it impossible to keep

(1) Up to 1920: PFANNENSCHMIDT, Dr. E., *Die argentinische Landwirtschaft*.

From 1921 to 1926: SERING, Geh. Rat. Prof. Dr. M., *Internationale Preisbewegung und Lage der Landwirtschaft in den aussereuropäischen Ländern*. Berlin, 1929. — From 1927 to 1931. « The South American Handbook » 1933.

up systematic assignment of land and regulation of conditions of tenure (1). In the following years there was some falling off, but from 1927 to 1931 there was again a rise in the immigration figures. From 1922 the population of Argentina has shown on the whole a tendency to increase, but there is a lag as compared with the pre-war period. With the pressure of the world economic crisis and in particular of the agricultural depression there is no question of a large increase in population by mass colonisation.

Under present conditions indeed a further limitation of immigration might well be decided on.

## 2. — The Development of Wheat Production.

### (a) *The Development of Areas under Wheat Cultivation* (1).

In consequence of the great advance at the turn of the century (2) of wheat prices beyond prices of slaughter cattle, there was from 1901 to 1905 an extraordinarily marked expansion of the wheat areas in Argentina amounting to about 75 per cent. This period was followed by one in which wheat prices and slaughter cattle prices rose together, but the latter more markedly than the former, so that wheat prices lost their power to stimulate expansion. During this period up to 1912 there was only a slow, although fairly steady, expansion of wheat cultivation. In the years 1912-1917 the price curves began to intersect, and no further extension of the areas under wheat cultivation occurred. From 1917 to 1921 the livestock prices led, and after 1917 the wheat areas were once more greatly reduced, and by 1921 the extent of the cultivation was the same as in 1905. Since wheat prices were less affected than prices of livestock products by the pressure of post-war conditions, there was from 1922 a further extension of wheat cultivation which in 1928 reached a record height. Under pressure of the world agricultural crisis, there has been from 1928 once more a marked decline.

The development of wheat cultivation in Argentina did not proceed with the rapidity that characterised the process in the other settlement countries (Canada and Australia). The difference is due to the fact that in Argentina besides the competition between arable cultivation and live stock farming, pasture and fodder crop production, there is also some rivalry between wheat, maize and linseed. There has been a considerable expansion of maize and linseed, and wheat cultivation has been proportionately decreased. Before the war linseed prices had on the whole the pull over wheat and maize. Under war conditions wheat had the advantage, but with the crisis of 1920 the price decline was much sharper with wheat and linseed than with maize. The downwards trend of prices that set in after 1925 at first affected linseed and maize

(1) BRINKMANN Prof. Dr. TH., *Ackerbau und Kolonisation in argentinischen Chaco*. Ber. ü. Landw., 12 Bd., S. 499.

(2) See BRINKMANN, Dr. TH., *Entwicklung slinien und Entwicklungsmöglichkeiten der landw. Erzeugung Argentiniens*. Ber. ü. Landw., 13 Bd. S. 569.

more than wheat, but in the later years on the contrary wheat was greatly affected in sympathy, and at the present time exhibits the most unfavourable price situation.

Areas sown and areas harvested are by no means identical in Argentina, as nearly every year the crop over a more or less large extent of the areas under wheat (even as much as 50 per cent.) is completely destroyed by unfavourable weather, insect pests or plant diseases, so that the areas harvested are frequently quite considerably smaller than the areas sown.

*Wheat cultivation in Argentina.*

Years	Area under Wheat 1000 ha	Yield per ha quintals	Production 1000 quintals
Average 1909-13 . . . . .	6,020	6.6	40,000
1923 . . . . .	6,900	9.8	67,400
1924 . . . . .	6,470	8.0	52,000
1925 . . . . .	7,130	7.3	52,000
1926 . . . . .	7,670	8.2	62,600
1927 . . . . .	8,170	9.4	76,800
1928 . . . . .	9,080	10.5	95,000
1929 . . . . .	6,440	6.9	44,200
1930 . . . . .	7,900	8.0	63,200
1931 . . . . .	6,490	9.2	59,800
1932 . . . . .	7,200	8.9	64,100

*(b) Development of Unitary Yields.*

The unitary yields of the areas under wheat cultivation in Argentina are low not merely in comparison with those of Western Europe, but also in comparison with Canada. In the pre-war period the average yield was much reduced by the rapid extension of the area under cultivation. With the subsequent shrinkage of area, the yield increased from 1917 to 1923, and again fell with the renewed expansion. Improved methods of cultivation, however, seem to have diminished the tendency for the yields to decline with an extension of area.

*(c) Development of Aggregate Wheat Production.*

From the above particulars the fact emerges that the total increase in the wheat production of Argentina, with the exception of the years 1927 and 1928, has been comparatively small when viewed in proportion to the extension of cultivation. If the production increased very considerably in the first years of the expansion (on virgin soil) up to 1907, it showed a considerable decrease from

1907 to 1916. In 1917, in spite of shrinkage of cultivation, the wheat production again reached the peak figures of the pre-war time as a consequence of improved unitary yields, and this level has been almost uniformly maintained during the whole of the post-war period, the exception being the years 1927 and 1928 with their record harvests.

### 3. — Wheat Area and Wheat Production *per capita*.

The less rapid progress of wheat-growing in Argentina than in the other settlement countries has already been noted and accounted for. It is however surprising, that *per capita* area under wheat has steadily declined in Argentina since 1905 with but few interruptions. This tendency may continue, unless some essential change in favour of wheat takes place on the world market situation for wheat and meat.

The *per capita* wheat production after rising very considerably from 1901 to 1907 dropped again markedly in the decade 1907 to 1916, and in 1916 was below the *per capita* production of 1901. From 1917 to 1932 it remained on the other hand fairly constant, the average being about 6 quintals per head. Taken as a whole the *per capita* wheat production has declined in the period 1917 to 1932 by about 20 kg. only, or 3.3 per cent., as compared with the period 1901 to 1916.

### 4. — The Net Wheat Export.

In the decade 1907 to 1916 the net Argentine wheat export tended to decline, although less markedly than the wheat production. After 1916 with the increase in production the export also increased although not so noticeably. The proportion of the export to the production has fallen somewhat in the post-war period as compared with the pre-war years. The fluctuations in exports show little regularity. The variations in the yields and consequently in the quantities exported depend on the incalculable effects of weather conditions. The Argentine wheat export speaking generally would appear to be at a turning point in respect to rate of increase; a declining tendency is not unlikely to appear, and in any case further increase is not probable.

### 5. — The *per capita* Wheat Export.

The Argentine *per capita* wheat export has on the whole declined almost parallel to the production per head; while the *per capita* production fell by 7.6 per cent. in the period 1917-1932 as compared with 1902-1917, the *per capita* export dropped by 7.8 per cent. If the first decade of the century is disregarded, the *per capita* export has remained nearly constant and varies according to the crop results round about 3.75 quintals per head.

6. — *Per capita Wheat Consumption.*

Since the wheat production per head has dropped somewhat less than the export per head has done, the average consumption quota per head has remained almost the same. It is however by no means to be concluded that the *per capita* wheat consumption has remained the same or even has risen; for very large quantities of wheat, which could not be placed upon the world market, had to be placed in store (but see later), so that it is even possible to speak of a decline in consumption, especially since in consequence of the diminution in cultivation larger quantities of seed wheat are left over. In any case everything goes to show that the Argentine farmer has endeavoured to balance the fall in wheat prices by increasing the quantities of wheat sold.

7. — *Outlook.*

Post-war developments have shifted the centre of gravity as regards the export trade of Argentina more than ever to the side of arable cultivation. It may however be taken as certain that this shift will not long continue; there are many indications that within the next few years a change will take place.

Wheat-growing has been affected by the price crisis more seriously than any other branch of agriculture and the shrinkage of cultivation which began as early as 1928 has led to a diminished production and to a great drain on the wheat stocks in Argentina.

*Development of Wheat Stocks in Argentina.*

Year Aug. 1st.	In 1,000 quintals
1925 . . . . .	15,800
1926 . . . . .	18,200
1927 . . . . .	18,800
1928 . . . . .	25,900
1929 . . . . .	35,400
1930 . . . . .	17,700
1931 . . . . .	21,800
1932 . . . . .	16,300

It would be in no way surprising if in the next few years there were further shrinkage in the wheat areas. As over 60 per cent. of the wheat production enters the export trade, the wheat export is bound to be considerably affected by any decline in production.

## IV. — AUSTRALIA.

## I. — Population Development.

The development of population in Australia exhibits the typical characteristics of all definitely colonial countries. The growth of the population is closely connected with the immigration and shows marked fluctuations in accordance with the course of immigration.

*Net Immigration into Australia (1).*

1871-1880 . . . . .	191,804	1920 . . . . .	47,117
1881-1890 . . . . .	382,741	1921 . . . . .	15,654
1891-1900 . . . . .	24,879	1922 . . . . .	38,023
1901-1910 . . . . .	40,485	1923 . . . . .	37,540
1911 . . . . .	69,300	1924 . . . . .	43,749
1912 . . . . .	83,791	1925 . . . . .	37,357
1913 . . . . .	54,775	1926 . . . . .	42,220
1914 . . . . . —	17,370	1927 . . . . .	48,924
1915 . . . . . —	91,053	1928 . . . . .	27,232
1916 . . . . . —	133,892	1929 . . . . .	8,963
1917 . . . . . —	21,950	1930 . . . . . —	11,408
1918 . . . . .	19,078	1931 . . . . . —	12,061
1919 . . . . . (2)	160,180		

(1) Official Yearbook of the Commonwealth of Australia.

(2) Returning troops.

Immigration into Australia has however always been on a small scale comparatively, and even the Imperial Migration and Settlement Act of 1922 did little to foster it. Immigrants have from the first tended to crowd into the towns and have not gone on the land; and in this way it has come about that nearly half the population of Australia is concentrated in the 5 largest towns. During the war the population of Australia was stationary, largely as the result of the sending of Australian troops to the scene of military operations, but with the return of the troops in 1919 together with favourable market conditions for wheat there was for a time a continuous increase. Since the onset of the world crisis in 1928 the natural increase in the population has again been checked and the immigration has again almost ceased. As there seems little prospect of favourable price conditions for agricultural products in the near future, it is unlikely that any extensive colonisation movement may be anticipated.

## 2. — The Development of Wheat Production.

(a) *Development of Areas under Wheat Cultivation.*

Even more than in Argentina the physical conditions of Australia with its immense arid tracts mark it out for the pastoral industries, and especially for sheep-raising. As wheat-growing has been, in some sense, carried on as a subsidiary industry only, its extension is to an extraordinary degree determined by the relations between wheat and wool prices. In the period 1900 to 1903 wheat prices were much in advance of wool prices and in consequence there was a considerable extension of wheat growing up to 1904. At the beginning of 1903 the price curves of the two products approached, and at the end of the year they intersected, so that wool prices now took the lead; wheat growing accordingly received a check and up to 1908 there was considerable reduction of areas. As early as 1906 however this tendency was modified and in 1907 the two price curves again coincided, and from that time up to 1915 their rise was nearly parallel. Wheat growing profited most by this rise in prices, as the return per acre is much higher than that of wool production. In consequence wheat growing was extended from 1909 to 1915, the resulting area being nearly double that of 1908. In 1914 however wool prices began to go ahead of wheat prices and up to 1918 were greatly in advance, while wheat prices declined from 1917. As a result the areas under wheat were considerably reduced between 1915 and 1919. The fall in wool prices in the years 1919 to 1921 restored the former price relation between wool and wheat, and wheat growing was again expanded up to 1921. This expansion received a temporary check only from the higher wool prices ruling from 1922 to 1925. Subsequently the advantage in price began to be with wheat, and from 1926 there thus came about an immense expansion in the wheat growing area, so that in 1930 this was more than 3.5 times the area under wheat at the beginning of the century. As is shown by the wheat acreage figures for the season 1931-32, this phase of development appears to be over, partly in consequence of the change in the price ratios, wheat prices remaining low and wool prices showing some slight improvement. Probably some reduction in the wheat areas of Australia is to be anticipated.

*Wheat Cultivation in Australia.*

Years	Area under wheat 1000 ha	Yield per ha quintals	Production 1000 quintals
Average 1909-13 . . . . .	3,080	8.1	24,600
1923 . . . . .	3,860	8.8	34,000
1924 . . . . .	4,380	10.2	44,800
1925 . . . . .	4,130	7.6	31,200
1926 . . . . .	4,730	9.3	43,800
1927 . . . . .	4,970	6.5	32,200
1928 . . . . .	6,010	7.2	43,500
1929 . . . . .	6,060	5.7	34,500
1930 . . . . .	7,350	7.9	58,100
1931 . . . . .	5,960	8.7	51,600
1932 . . . . .	6,330	8.6	54,500

(b) *Development of Unitary Yields.*

Owing to the limitation in the pre-war years of wheat growing to the regions naturally best suited for the crop, *viz.* the Eastern and South-Eastern States, and to the adoption of sound technique in cultivation, the Australian yields per acre were satisfactory and remarkably uniform; it was possible to avoid decline in yields from extension of area under cultivation. With the rapid expansion of the cultivation after the war, the yields declined [and showed greater fluctuations.

(c) *Development of Aggregate Wheat Production.*

In the pre-war period the Australian wheat production showed a slow but continuous increase parallel to that in the areas under cultivation. A crop failure in 1914 was followed by a record crop in 1915. From 1915 to 1919 there was a serious decline in wheat production. From 1920 there was again a marked advance. Owing to especially favourable weather conditions the yields for 1930-31 and 1931-32 have been relatively high, so that the harvests have been the largest ever produced in Australia.

3. — Wheat Areas and Wheat Production *per capita*,

The *per capita* area under wheat in Australia increased up to 1915 in advance of the population. In war time it dropped back to a minimum, and then again rose considerably, so that in 1930 a maximum was reached. The disastrous position on the world wheat market is forcing Australia in spite of all efforts to a limitation of the areas under wheat cultivation, as may be seen from the figures for the 1931-32 season.

Wheat production per head in pre-war times showed a rise parallel to the increase in population. In post-war times the *per capita* production, although with somewhat wide fluctuations, has remained constant.

4. — The Net Wheat Export.

The net wheat export from Australia shows large fluctuations corresponding to the crop return, but in the pre-war years advanced nearly parallel with the advance in production and on the average amounted to 50 per cent. of the production. While in the first post-war years the export was about 70 to 75 per cent. of the production, it fell again, and in 1929-30 reached only about 50 per cent., and large stocks have been formed.

5. — The *per capita* Wheat Consumption.

It is the more difficult to make a statistical estimate of the *per capita* consumption of wheat, since although the *per capita* production and export are known, only the visible stocks are recorded statistically. In the post-war period in particular large stocks have accumulated, so that the *per capita* quota of wheat seems to be 6 per cent. higher than the pre-war. In reality it has probably declined by some 6 to 10 per cent.



## 6. — Outlook.

During the war Australia was looked upon as an Eldorado. Although sharing in the common suffering caused by the war, at the same time there was prosperity in the fifth continent so long as the absorption capacity of the European market was such that every pound of wool, every ton of hides, every bushel of wheat was in request. For the first few years after the war the favourable market conditions for raw materials still continued. Then came the lean years. There had been in all directions an immense over-stimulation of production and this led to the financial breakdown of Australia. The efforts of the farmers, to escape from a critical position, led to the extension of the area under wheat, just when in other countries it was being reduced, in the hope of securing a profit out of the supposed imminent shortage.

It is therefore not surprising that the wheat stocks of Australia went on accumulating even after 1929 in a disastrous manner, while stocks in Canada and Argentina could be largely reduced. Although Australia has succeeded in exporting large quantities of wheat to the Far East, the large Australian stocks still overshadow the world market and prevent any improvement of the wheat market situation in the near future. Australia will be forced by prevailing conditions once more to restrict areas under wheat cultivation.

### *Wheat Stocks in Australia.*

Year August 1st	in 1000 quintals
1925 . . . . .	6,500
1926 . . . . .	4,600
1927 . . . . .	6,300
1928 . . . . .	7,300
1929 . . . . .	7,300
1930 . . . . .	10,100
1931 . . . . .	12,500
1932 . . . . .	10,900

## V. — THE WORLD.

Although great interest and importance attaches to the investigations in the separate countries, their world significance and effect can only be judged if the results of the different countries are taken together.

### I. — Population Development.

In the course of the nineteenth century the population of the world increased to an extent previously unparalleled. Whereas in 1800 the total population of the world was not quite 600 millions, in 1870 it was about 1400 millions, and in 1930 something over 2000 millions (1). In the course of the

(1) See: BURGDÖRFER, FRIEDR. *Volk ohne Jugend*. Berlin 1932.

last hundred years the world population has thus doubled and as compared with 1800 more than trebled. This immense growth in population, only made practically possible by the great advances in technique and in hygiene, filled timorous minds with alarm in respect of the struggle for the margin of subsistence involved. To-day the spectre of overpopulation has vanished. Signs of "fatigue" appeared at the beginning of the 20th century in the population increase of the world, and the relative decline was clearly visible from 1920.

Much more important than the question of overpopulation is the problem of the decline of the birthrate, regarded from the international standpoint alike in the present and in the near future. Here also exaggeration must be avoided; just as an overpopulation of the globe is unlikely, so there is no need to fear an actual depopulation as a result of this decline. The effect is likely rather to take the form not merely of changes in the structure of the populations affected and in their relative strength, but also of readjustments in the food supply of the world's population, such as may be of significance in world history. It is agriculture that must in the first instance bear the consequences of any decline in the population.

An element of uncertainty is imported into this enquiry by the U. S. S. R.; the Russian statistics at the present time do not appear to be reliable, and at the same time no separation on a comparable basis of statistics is made of Russian territory into European and Asiatic Russia. For this reason the development of world population is first investigated apart from Russia, and then separately shown including Russia.

The population development of Russia in no way annuls the general population development of the world but rather intensifies it. The natural increase of population of the U. S. S. R. after the revolution was so great, that it nearly compensated for the immense losses of human life caused by the world war, the civil war, epidemics and famine. From 1924 to 1930 the increase amounted to about 20 million, an astonishingly large figure. The cause of this increase, however, is not a corresponding excess of births, but a diminished mortality. In the three years from 1911 to 1913 the birth rate was 46.8 per 1000, and in the three years 1926-28 it was only 40.0, while the death rate fell from 30.5 to 17.4 over the same period (1).

## 2. — The Development of the Wheat Production of the World.

### (a) *Development of Areas under Wheat Cultivation.*

For five or six years in the pre-war period a development of the world wheat areas apart from U. S. S. R. went on somewhat irregularly, and reached a maximum in 1915. If the causes of this development are examined, the by no means surprising result appears, that the "focus of unrest," the impell-

(1) FARBMAN, MICHAEL, *Piatiletka, Russia's 5 Year Plan*. Translation by von R. Hilferding. Berlin 1931.

ing forces, lay in the countries in course of colonisation, Argentina and Australia. As soon as price relations in those countries as between meat or wool and wheat moved in favour of wheat, wheat growing, as already explained, underwent a great expansion, which was followed when conditions were reversed by stationary position or limitation of areas. The production of these countries readily reacts on price pressure because the restrictions imposed by natural and social conditions on production are very slight, and consequently the freedom in choice of crop production is very great. With the exception of Europe, in which the areas under wheat production remained almost constant in the pre-war time, there has been a fairly uniform increase in the wheat areas. In the increase that went on from 1911 to 1915 it was only Canada and the United States that largely participated. In the decrease of area from 1915 to 1917 only the United States and Australia, together with Europe, were concerned, while wheat-growing remained stationary in Argentina and in Canada it even increased. The expansion of wheat growing from 1918 to 1923 occurred almost exclusively in the United States and to a small extent in Canada. The extraordinarily large extension from 1924 to 1931 was almost exclusively effected by Argentina and Australia alternately.

The pre-war development of the wheat areas of the world may be taken as the same, whether Russia be included or not, since similar conditions prevailed for Russia as for Europe. As there was a great expansion of wheat growing in Russia even before the war, the general tendency towards increase at that time is reinforced, if Russia be included. From 1914 to 1922, wheat growing in Russia, not least as a consequence of the agrarian revolution, was reduced to about one third of the pre-war extent. Then began Russia's struggle for her place on the world wheat market with the help of the large mechanised farms and accompanied by an immense extension of the wheat growing area. This in 1927 had already reached the extent of 1914, and in 1930 had already exceeded the previously largest area under wheat in Russia (1913). The wheat areas of the world accordingly underwent within 9 years (1922-1930) an expansion of more than 30 per cent., and have thus risen considerably more quickly than the world population.

### *Wheat Cultivation of the World*

(World apart from U. S. S. R., China, Turkey, Persia and Irak).

Years	Area sown 1000 ha	Area harvested 1000 ha	Yield per ha harvested quintals	Production 1000 quintals
Average 1909-13 . . . .	82,030	80,100	10.3	827,600
1923 . . . . .	92,890	90,130	10.5	946,200
1924 . . . . .	90,370	88,340	9.5	840,300
1925 . . . . .	93,760	89,490	10.2	908,600
1926 . . . . .	94,500	93,150	9.9	924,400
1927 . . . . .	98,130	95,530	10.3	982,800
1928 . . . . .	103,590	98,840	10.8	1,072,200
1929 . . . . .	100,660	97,690	9.6	939,500
1930 . . . . .	103,440	101,070	10.0	1,011,600
1931 . . . . .	99,090	97,710	10.2	999,300
1932 . . . . .	102,880	99,330	10.1	999,600

(b) *Development of Unitary Yields.*

Taking the wheat growing of the world, apart from Russia, from 1901 to 1914 the unitary yields showed a not inconsiderable rise, although of course the yield remained actually small. After the serious decline of the yields per unit at the time of the world war there followed from 1916 onwards a rise, at first slow but gradually increasing, in the yields, so that already in 1928 the high average yield of the three last pre-war years was again reached.

The wheat yields of the world *including* Russia show the same development as apart from Russia, except that in the pre-war time the low Russian yields depressed the world average yields by about 1 quintal per hectare, or about 10 per cent. ; in the post-war years on the other hand in consequence of improved methods of cultivation the Russian yields were considerably higher, so that their effect was to lower the average world yields by about 5 per cent. only.; accordingly the average world wheat unitary yields during the post-war period exceeded those of the pre-war time.

(c) *Development of Aggregate World Production.*

The wheat production of the world, apart from Russia, showed a steady increase with somewhat wide fluctuations in the pre-war time, and in 1915 there was a record total production about 50 per cent. higher than in 1901. In war time, from 1915 to 1917, the production dropped back to below the level of the year 1903. There followed however a fresh, still more rapid, rise in the production which as early as 1923 was in advance of the point reached in 1915, and in 1931 totalled nearly 102 millions tons, or about 60 per cent. of the wheat production of the world at the beginning of the century.

The wheat production of the world including Russia followed the same course, except that the production rose still more rapidly: up to 1915 by about 56 per cent. and up to 1931 by about 74 per cent.

## 3. — The World Trade in Wheat (1).

The wheat trade of the world, excluding Russia, increased considerably during the pre-war time; the volume of trade became larger by 33 per cent. between 1903 and 1913. During the war the world trade in wheat underwent an extraordinary shrinkage and up to 1918 declined to some 50 per cent. of the volume in 1913. In the post-war period owing to the need for foodstuffs in Europe there was an unusually rapid recovery of trade, so that already in 1920 the 1911-1913 volume was again reached. Under the pressure of the rapidly increasing overseas production there was an unprecedented continuous rise in the world wheat trade, which in 1929 reached a total turnover of about 24.5 million tons, *i. e.*, an advance as compared with 1903 of about 60 per cent. and as compared with 1913 of about 12 per cent.

(1) Total import of all countries, apart from Russia.

*Net Wheat Exports \*).*

(1000 quintals)

Year August 1st.-July 31st	Canada	United States	Argentina	Australia	Four chief Exporting Countries	Other Exporting Countries apart from Russia	U. S. S. R.	World Exports
Average 1909-10-1913-14 . . . . .	25,800	29,700	22,900	14,900	93,300	46,500	44,700	184,500
1923-24 . . . . .	93,700	33,800	46,700	22,900	197,100	20,600	5,600	223,300
1924-25 . . . . .	51,900	69,300	33,400	33,200	187,800	21,000	—	208,800
1925-26 . . . . .	87,800	28,000	25,600	20,600	162,000	18,200	7,600	187,800
1926-27 . . . . .	79,200	53,600	38,900	27,500	199,200	15,800	13,300	228,300
1927-28 . . . . .	90,100	49,600	48,300	18,900	206,900	14,800	700	222,400
1928-29 . . . . .	110,100	40,400	60,300	29,100	239,900	14,200	—	254,100
1929-30 . . . . .	50,100	38,600	41,000	16,600	146,300	20,300	2,600	169,200
1930-31 . . . . .	70,100	30,500	33,800	41,000	175,400	20,000	30,900	226,300
1931-32 (estimated) . . . . .	56,100	30,500	37,900	41,900	166,400	30,600	17,400	214,400

(\*) Wheat and flour reduced to grain.

If the direction of the world wheat trade is examined, a marked structural change is noticeable in the post-war period. Whereas before the war 91 per cent. of the quantities entering the world market went to Europe, this proportion became essentially smaller after the war in consequence of the barriers raised by the former purchasing countries. In spite of the great increase in the world wheat trade during the post-war period, the import of wheat into Europe up to 1926 did not reach the pre-war volume of 1909-1913. Only in 1927, when under the pressure of the overseas wheat stocks wave after wave of wheat rolled on to Europe, was the pre-war volume exceeded.

Afterwards up to 1930 as the result of the trade restrictions imposed by the purchasing countries, the quantities imported fell below the pre-war volume.

The wheat driven off the European market had to find other markets, and these were partly forthcoming in the growing import requirements of the Far East. In particular Australia has taken advantage of this, as giving her a nearer market. Under the pressure of continually increasing world wheat stocks the United States and Canada are making special efforts with the help of large credits to open new marketing possibilities for their surplus wheat in China. How far, if at all, these efforts will meet with lasting success, it is impossible to foretell.

Even more decisive and important than the change, which has taken place in the world wheat trade, is the structural change, which the wheat supply of industrial Europe has undergone since the beginning of the century (Graph IV).

At the beginning of the twentieth century the wheat exports from the overseas countries, especially from the United States of America, began to decline sharply. Instead, the agrarian countries of Europe, Russia and the Balkan countries, took the leading place among the suppliers of industrial Europe. In consequence of the growing economic interdependence of industrial Europe and the overseas countries, the United States and Canada somewhat suddenly in 1910 entered the European markets with large wheat exports and in a short time forced the agrarian States out of their special position. In 1910 the agrarian countries contributed 75 per cent. of the wheat supply of industrial Europe, in 1913 only about 52 per cent. The outbreak of war in 1914 put a speedy end to the export from the belligerent agrarian States of Europe (Russia and the Balkan countries). It then fell to North America to replace for the Allies the wheat formerly exported from Russia and the Danube valley, now cut off from the consuming countries, and from 1916 to 1920 the North American supplies amounted to from 97 to 99 per cent. of the total wheat requirements.

By the Revolution which followed on the war the great Russian Empire was converted into a domain of small farming, state controlled industry and export trade. As a result of the agrarian revolution and, later, of the policy of industrialisation agricultural products ceased to flow regularly from Russia into the Western European industrial areas and in some years Russia was even obliged to import wheat.

The above is not only one of the most important among post-war developments, but also one of the keys to the understanding of present currents and under currents in Russian agriculture directed towards the establishment of fully mechanised giant farms.

Rumania and the remaining Balkan lands have followed Russia in carrying out drastic agrarian reforms (1). The agrarian crisis of the Eastern and South Eastern European States was largely due to the decline in agricultural production as the consequence of the post-war agrarian reforms which had been carried through too hastily and without a proper economic basis.

The consequence for the States of Eastern Europe, excluding Russia, was a shrinkage in wheat exports (see Graph IV) and in the import of manufactured goods. These countries, indeed, could no more speak of "overseas competition" on the European market, as in consequence of the decline in production they had no wheat surplus worth mention. This situation underwent a change later, and these countries recently began to export once more large surpluses, which could only be placed on the European markets. Here the competition of the overseas supplies is encountered, although this is being gradually overcome, not without a severe struggle and serious political sacrifices.

Up to the middle of 1930 the wheat surplus of Russia remained small and the requirements were still in part met by imports. It was not till July 1930 that any real effort was made towards resumption of the former position of Russia on the world wheat market. The prospects of further development of Russia's wheat export are, however, still extremely uncertain. Indeed as shown by the preceding table, the record figure of 1930-31 was not maintained, and since 1931-32 a fresh diminution of exports took place.

It is very probable that economic and financial consideration will be likely to force upon Soviet Russia and the agricultural countries of Eastern Europe an increase of their wheat exports. At the same time, the wheat import requirements of industrial Europe have considerably diminished since 1927 and will probably further decrease. Up to the present the overseas countries have had to bear the brunt of the loss of the European markets. A situation as regards the wheat supply of industrial Europe is obviously forming which greatly resembles that of the pre-war period.

#### 4. — Survey.

The outlook as regards the future prospects of the world wheat market would seem from these investigations to be extremely unfavourable. This finds confirmation also in the extremely depressed situation of the wheat export market. In any case these enquiries clearly show that both the area under wheat and the wheat production of the world have outstripped the population increase and therewith the demand. The impulse to this development was given by the great rise in wheat prices on the world market during the world war. The price rise at the outbreak of war in the crop year 1914-15 brought about only a relative extension in areas, but this rise was of short duration only

(1) HOLLMANN, Dr., *Die Agrarkrise der ost- und südosteuropäischen Staaten*, in « Deutsche Agrarpolitik in Rahmen der inneren und äusseren Wirtschaftspolitik ». Bd. 3.

(see Graph V) and there was a much more rapid rise in prices of live stock products. The exceptionally sharp rise of wheat prices in 1916-17 to three times the pre-war prices and the height reached by wheat prices in 1917-18 and 1918-19 could not prevent a sharp decline in wheat areas overseas, since livestock products commanded still higher prices. When in 1918 there was a severe set-back in prices of livestock products, the area under wheat in the United States underwent an immense extension. This expansion of wheat growing was due to the raised wheat prices, which in 1917-18 and 1918-19 were 2.25 times the pre-war prices and in 1929-30 were three times these prices. When however in 1930-31 wheat prices fell abruptly, the United States were obliged again considerably to reduce the areas under wheat. The wheat prices fell rapidly till in 1923-24 the pre-war situation was reached. In 1924-25 prices once more rose to twice the pre-war level. This rise, which was not accompanied by a corresponding rise in prices of livestock products, brought about, taken in conjunction with the great advance in mechanisation, that great extension of wheat areas and of wheat production in the lands still under settlement, and in the United States the further extension of the wheat area, which taken all together is threatening to stifle the world with wheat. Although the stocks of wheat were accumulating from year to year on the world wheat market, prices of wheat went only slowly back from 1923-24 to the beginning of 1930.

*Wheat Stocks on the World Wheat Markets*  
(in 1000 quintals).

Years	Total	Canada	U. S. A.	Argentine	Australia	Other countries	Afloat
1925. . . . .	145,900	8,200	31,800	15,800	6,500	71,600	12,000
1926. . . . .	166,500	10,900	27,200	18,200	4,600	90,600	15,000
1927. . . . .	176,700	14,400	32,400	18,800	6,300	88,200	16,600
1928. . . . .	196,000	25,000	34,600	25,900	7,300	85,800	17,400
1929. . . . .	267,100	34,600	66,700	35,400	7,300	106,200	16,900
1930. . . . .	252,200	34,600	80,600	17,700	10,100	95,000	14,200
1931. . . . .	276,000	38,100	90,900	21,800	12,500	96,900	15,800
1932. . . . .	264,200	37,000	103,100	16,300	10,900	83,300	13,600

These conditions changed very suddenly when Russia in June 1930 began the struggle for its former place on the world wheat market, and threw large quantities of wheat on the world market at disastrous prices. In the four



months June to September 1930 the price of No. 1 Manitoba wheat fell nearly 45 per cent. in consequence of the Russian sales at these ruinously low prices. Since then wheat prices on the world market have continued to fall and at the end of 1932 they were even nearly 50 per cent below the pre-war prices. In any case there can be no doubt that an essential cause of the abrupt decline of the world wheat prices was the Russian export, both from its immense volume and from the method of marketing employed.

It is impossible even approximately to foretell the direction of any future developments on the world wheat market; as this depends on a number of factors, not merely economic but also political, the effect of which cannot be determined in advance. An increased consumption of wheat in consequence of growth of the world population in the past was undoubtedly a factor, but in the near future this increase in consumption is likely to take place slowly. The development of wheat consumption in the world generally is also a matter of considerable uncertainty. In the case of the actual wheat consuming peoples there has undoubtedly been a retrogression in consumption by about 8 to 10 per cent., and this taken together with the higher (or at least unchanged) wheat production per head of the world population must lead to the accumulation of still larger stocks and to price falls. A decline in wheat consumption on the part of this population group, even if no more than a 5 per cent. decline, involves a marketing loss of about two million tons. How far, on the other hand, it will prove possible to induce that half of the world population that now consumes rice or millet to consume wheat instead, is equally beyond calculation. In any case the fact that the world wheat stocks are not still larger than they are is probably to be attributed to the increasing trade in wheat in the Far East.

The judgment of the outlook in regard to the world wheat market tends to be increasingly pessimistic, particularly on account of the apprehension felt at the prospect of a fresh appearance of Russia as a wheat exporter. Russia is at present a very real factor on the world wheat market, but a wholly incalculable one. In 1930 the wheat production of Russia amounted to about 23 per cent. of the world production, that is to say, from one and a half to two times the capacity of the world wheat market. Even if Russia were a country with a free economy, the fluctuations of the Russian wheat harvests could not fail to be of great influence on the world market. A Bolshevik Russia with a monopoly of foreign trade, forced requisitions within the country itself and measures of food control for the population, forms a factor which can by no means be overlooked. The second Five-year Plan for agriculture in the U. S. S. R. provides for the extension during 1933 to 1937 of the total sown areas to 200 million hectares, the intention being to increase the gross production of cereals, by means of further application of machinery and of fertilisers, to 60 per cent. of the total agricultural production of Russia. If the Russian Government, by means of requisitions without commensurate payment and by limitation of the bread rations, releases only 10 per cent. even of this production for export purposes, the effect on the world market cannot be otherwise than disastrous.

## VI. — GENERAL SURVEY.

1. — The very marked increase of the population of the world which occasioned the rapid progressive development of world agriculture in the pre-war period was not continued in the post-war period. Some signs of fatigue in this respect appeared before the war, and after the war, certainly from 1921, the world population began relatively to decline under the influence of the reduction in the birth rate. The sudden check in the population increase was most noticeable precisely in those countries which had been regarded as the consuming countries on the world wheat market. This tendency will become more pronounced in the near future, although there is no reason to anticipate an absolute decrease of population to the extent of depopulation of the globe.

2. — The centre of gravity of world agriculture has been shifted since the war more markedly than before to the side of arable, and particularly of wheat cultivation. In consequence the areas under wheat in the world have increased more rapidly than the population. The expansion of wheat growing has occurred almost exclusively in the overseas countries. There, owing to natural and economic conditions and to the system of land tenure, a high degree of freedom in direction is possible for agricultural production in the primary stages. Any graphic representation of the development shows marked fluctuations, and the distinctive character of these is due to the competition between extensive arable cultivation and extensive livestock farming.

Under the influence of the progress made in plant-breeding, and in the technique of machinery and cultivation in general, an extraordinary capacity for expansion was achieved after the war in wheat growing. The modern agricultural machine has essentially contributed to the recent land clearings and transformations in the overseas arable areas, and may probably have in addition contributed in Canada, Argentina and Australia to facilitate the transition to wheat growing on the large ranch or similar area, and generally to render the cultivation more intensive.

3. — The agricultural development of the new countries does not depend so closely upon immigration, as is often assumed.

4. — As a means of increasing crop yields, plant breeding ranks first in overseas countries among the advances made in agricultural technique. Selected kinds suited to the vegetative and economic conditions of the countries have rapidly been diffused, so that, with the exception of Australia, the average yields have not fallen, in spite of the rapid expansion of the areas, and indeed have, in some cases, on the contrary, risen.

5. — Thanks to extension of areas and technical progress the wheat production of the world has risen at a rate more rapid than corresponds to the natural growth of the world population. This fact together with a diminution in *per*

*capita* wheat consumption in many countries has led to the accumulation of large stocks of wheat on the world wheat markets and to heavy price declines. In the case of wheat production, possibilities have proved to be in advance of marketing facilities.

6. — In the world wheat trade certain changes became clearly noticeable shortly before the war, indicating that the source of the wheat supply of industrial Europe was being shifted to the overseas countries. On the outbreak of war, with the resulting isolation of Russia and of the Balkan countries, the overseas countries became the exclusive suppliers of the European wheat market. Under the pressure of the world economic crisis the European national States are beginning to practise a policy of agricultural self-sufficiency, under which the national agriculture takes a foremost place in the supply of the home market. For the rest the trade policy of these States is definitely oriented towards South and South-Eastern Europe, so that the share of the agrarian States in meeting the wheat import requirements of industrial Europe is steadily on the increase. The importance of the agriculture of the old industrial countries and of the agrarian States of Europe for the supply of industrial Europe will probably in the near future be very considerably increased, while the agriculture of the overseas countries, on the other hand, will to some extent recede.

7. — The trend of the price movements for the chief agricultural products already indicates that arable cultivation, in particular wheat-growing, has already on its forward march overstepped the critical point. It may be taken as certain that the tendency to extend wheat cultivation will not persist; there is much to show that in the next few years a change-over towards livestock farming will set in. It can be no matter for surprise if within the next few years wheat growing in the overseas countries undergoes a not inconsiderable decline, and only in this way is it possible to secure the recovery of world agriculture.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

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### CO-OPERATION

#### Agricultural Co-operation in Latvia (1).

##### SOME GEOGRAPHICAL AND HISTORICAL NOTES.

Latvia, which has been since 1918 an independent State, belongs to the group of the Baltic countries. Before the war it was an integral part of the Russian Empire and its national independence dates from 1918. The capital of Latvia is Riga, the territorial extent is 65,791 square kilometres, and the population 1.9 million according to the census of 1930. During the great war Latvia formed the battle ground between the Russian and the German armies ; then followed the Russian Revolution and the war of independence with the result that the devastation inflicted upon the country can be compared only with that of the North of France and Belgium. Latvia is essentially a country of small holdings, since by the agrarian reform legislation (1920) subdivision of the large estates into units not exceeding 27 hectares was enforced.

##### PRE-WAR CO-OPERATION.

The first societies of a co-operative character founded on the present territory of Latvia were as follows :—

- (1) The Vidzeme Sheep-Breeders' Society (Livonia), founded in 1830.
- (2) Vidzeme Mutual Hail Insurance Society, founded in 1831.
- (3) Vidzeme Mutual Fire Insurance Society, founded in 1861.

A close connection existed between the foundation and the course of the activity of these societies and the work of the Livonian General Economic Public Utility Society, founded in 1796, which is the earliest of the Latvian societies formed for the promotion and development of agriculture.

The object of the sheep-breeders' society was to develop the breeding industry, to secure the good quality of the breeding animals and to organise the joint sale of wool in such a way as better to profit by market conditions. It may be noted that the foundation of this society closely coincided with the agricultural crisis which occurred about 1820 in consequence of the sudden fall in the price of wheat. The large landowners then began to breed sheep.

The societies that have just been mentioned had been founded by the large landowners who were almost without exception Germans.

(1) For the communication of the above account of agricultural co-operation in Latvia the Institute is indebted to the Ministry of Agriculture of Latvia.

Small ownership only began to develop in Latvia towards the middle of the XIXth century. From this epoch also date the first co-operative undertakings, as organised by the peasant farmers who for the most part were of Latvian nationality.

The first co-operative undertakings organised by the peasants were co-operative credit societies and mutual insurance societies. The first co-operative credit society was founded by the Latvian peasant farmers about 1840. These societies were however short-lived, the Russian public authorities prohibited their activity on the pretext that credit operations could be effected only by credit societies formed among the noble classes. A real expansion of peasant co-operative credit societies began only in 1874 and attained its culmination towards 1880. The reason for the formation of numerous co-operative credit societies at this time may be found in the fall of the prices of agricultural products (especially wheat and flax), and in the want of liquid assets which was affecting the peasant farmer class. Many heavily indebted farms were put up for auction. The Government gave no assistance and the peasants, thrown upon their own resources, endeavoured to find a way out of the situation in the foundation of co-operative credit societies.

The subsequent formation of co-operative credit societies proceeded somewhat rapidly, so that on the eve of the great war Latvia was covered with a comparatively close network of co-operative societies. The number of co-operative societies in working at this time was in fact 236, the majority being credit societies.

The co-operative credit societies of Latvia belong to the Schultze-Delitsch type. All the funds are collected by the exertions of the members themselves without any assistance from the Government or from the municipal and communal administrations, which were before the war in the hands of the large land owners, the Baltic barons. It is of interest that local deposits represented 86 per cent. of the aggregate balance sheet totals of all the co-operative credit societies. These societies in addition gave proof of great vitality; out of all the co-operative societies founded before the war, 95 per cent. were still working in 1914, so that the percentage of societies liquidated is represented by 5 per cent. It may be noted that all the attempts of these co-operative societies to organise a central union grouping the separate undertakings were without result, as the Russian Government would not consent to authorise the foundation of such a central union.

*Co-operative Mutual Insurance Societies* have also made remarkable progress. Although the first co-operative fire insurance society was not founded till 1880 when the Government authorisation was granted through registration of statutes, peasant farmer unions for the purpose of mutual insurance were formed already about 1860 and especially towards 1870. In 1914, on the eve of the great war, there were in Latvia about 300 societies of mutual fire insurance. Towards 1880 there were also founded some small farmers' hail insurance societies, but these have not met with much success and this branch of co-operation makes no progress.

*Among the consumers' societies organised by the farming class* special mention should be made of co-operative farming societies and consumers' societies in the rural districts. The first peasants' farming societies were founded towards



1870, the first initiative of this kind was taken in 1855. The original object of these societies was to diffuse agricultural information, but later their activities were engaged in the purchase of agricultural requisites of all kinds.

It should however be noted that the farming societies founded about 1870 were by no means completely independent societies, for they merely represent the peasant sections of the German General Economic Society mentioned above. None the less these societies have exercised an undeniably favourable influence on the progress of agricultural knowledge among the Latvian peasant farmers.

From 1870, under the impulse of the ideal of national reconstruction, tendencies begin to appear calling for the formation of independent Latvian farming societies. But it was only after 1885, and not without having first to overcome a certain opposition on the part of the large land owners — the Baltic barons — that the Latvian peasant farmers received the authorisation to form independent farming societies. Up to the time of the great war nearly 200 farming societies were thus formed.

In 1906 effect was given to the desire of the Latvian peasant farmers to form a Central Union of farming societies, and permission was obtained from the Government to found at Riga the Central Society of Agriculture. This society is now in operation under the name of "Latvijas lausaimnieku centralbiedriba" (Latvian Farmers' Central Society). It is a union of agricultural societies with the object of improving the standard of cultivation and of all the branches of production subsidiary to agriculture.

The first rural consumers' society was founded in 1889 whereas the first urban consumers' society had been founded at Riga in 1865. The years 1890-95 was a period of special activity in the forming of consumers' societies. Up to the time of the outbreak of war about 150 consumers' societies had been formed. The special object of the rural societies of the kind was the purchase of products and commodities for the personal requirements of the farmers as well as for the requirements of agricultural production.

In consequence of the difficulties encountered by these consumers' societies, from 1890 onwards a desire began to be expressed for the formation of a union for wholesale purchase of requisites. The refusal on the part of the Russian Government to authorise the formation of such a society made all efforts vain up to the time of the war.

The marked activity in the foundation of farming societies and consumer societies about 1890 finds an explanation in the severe agricultural crisis which occurred from 1880 to 1890. Moreover the formation of these co-operative societies was strongly influenced by the nationalist efforts of the Latvian peasant farmers who were trying to free themselves from economic dependence on the foreign element. It is essential to lay emphasis on this reason which has played a primary part in the development of co-operation in Latvia.

The co-operative marketing societies were the last to be developed, immediately before the war. Only a single type of these societies is to be found in Latvia, namely the dairy societies. The object of these is the production of butter of very good quality and the organisation of the sale of such butter on the most favourable terms possible.

The first dairy society was founded in 1909. Subsequently the foundation of these societies proceeded more rapidly, so that on the eve of the war their number had reached 95. The dairy societies obtain financial assistance from the co-operative credit societies founded by the same members of the farming class.

Steps have been taken since the war to form a Central Union of Dairying societies, but all efforts in this direction were cut short by the outbreak of the war in 1914.

#### POST-WAR CO-OPERATION.

The co-operative societies established before the war were almost wiped out in the course of the hostilities, since Latvian territory, as already stated, was over a prolonged period the scene of the military operations. Later came the period of the German occupation and the German authorities were entirely unfavourable to all co-operative movements.

After the war, when Latvia became an independent state, it proved necessary to start afresh on the work of organising co-operation. Life had to be reconstructed on the ruins. And in this work of reconstruction a part of primary importance was played by co-operation.

In 1919, 1920 and 1921 the consumers' societies engaged the full attention of the population, and the explanation of this is an obvious one. The country was completely devastated, everything in ruins and destitution everywhere prevailing. It was only later when more normal conditions began to be established, that the remaining types of co-operation regained importance. Then it was that steps were taken to organise co-operative credit societies, mutual insurance societies for joint use of farm machines, for improvement of the soil, etc.

*Rural consumers' societies.* — These societies at first engaged exclusively in the supply of food stuffs, and it was only later that they began to supply also farm requisites such as chemical fertilisers, concentrated feeding stuffs, machines, implements, etc., in this way taking the place of the pre-war farming societies. These latter societies have not at present regained their former significance.

The following table gives a general view of the development of rural consumers' societies:

Years	Consumer Societies	Membership in thousands	Aggregate of balance millions of lats (= gold francs)
1921 . . . . .	286	44.1	1.1
1922 . . . . .	294	45.8	1.9
1923 . . . . .	295	46.6	3.9
1924 . . . . .	300	48.7	6.4
1925 . . . . .	284	49.4	9.0
1926 . . . . .	273	47.3	9.3
1927 . . . . .	268	43.9	10.2
1928 . . . . .	263	43.1	11.6
1929 . . . . .	253	39.3	12.5
1930 . . . . .	250	37.7	11.8
1931 . . . . .	238	35.3	10.7

No uniformity prevails in the consumers' societies in respect of the social group composition of the membership. At the end of 1931 the lead was taken by the farmer owners; these represented 64.3 per cent. of the total of the members and the relative number of members of this class shows a tendency to increase (in 1921, 46.6 per cent.; in 1929, 57.3 per cent.; in 1930, 62.7 per cent.). The second place is taken by the farm workers 7.9 per cent., and the third by the intellectual workers, 7.3 per cent.

If an examination be made of the composition of the balance sheet totals it will be found that on the side of *liabilities* the heading of owned capital (members' shares and owned capital) represented in proportion to the aggregate of the balance sheet totals the following percentages:

in 1921 on 31 December . . . . .	24.6 per cent.
1929 31 " . . . . .	23.8 "
1930 31 " . . . . .	27.7 "
1931 31 " . . . . .	32.2 "

It should be added that consumers' societies in Latvia have always attached a special importance to the increase of the owned capital. In accordance with the model rules the proportion which should be reserved annually for the increase of the society's owned capital is represented by 40 to 50 per cent. of the net income.

This constitutes the explanation of the fact that in 1930 the members' shares represented only 5.7 per cent. of the aggregate of the balance sheet totals while the owned capital (including the reserve fund and other capital) represented 22.0 per cent., or in other words, nearly four times the shares.

The deposits also represent an important item — thus, in 1930, they represented 16.7 per cent. of the aggregate of the balance sheet totals. The remainder consists of sundry debts (mainly short term) and of the net profit representing, in 1930, 2.8 per cent. of the aggregate.

The progressive situation of the main headings of the *assets* is as follows (shown in percentages of the aggregate of the balance sheet totals):

Years	Commodities	Buildings and undertakings	Borrowers
1921 . . . . .	56.9	18.4	4.7
1929 . . . . .	31.1	26.8	29.0
1930 . . . . .	29.8	30.6	27.0
1931 . . . . .	25.0	33.6	28.5

If the balance sheet totals of the rural consumers' societies are considered as a whole it will be seen that the liabilities are on a very sound basis, while the assets present some definitely unsatisfactory features: (a) an extraordinary inflation under borrowers and (b) a complete discrepancy between the item of buildings and undertakings and the whole structure of the liabilities.

The following is a review of the turnover of the rural consumers' societies (value of commodities sold in millions of lats) :

1921 . . . . .	5.5	1927 . . . . .	19.2
1922 . . . . .	8.4	1928 . . . . .	21.7
1923 . . . . .	14.9	1929 . . . . .	24.5
1924 . . . . .	18.7	1930 . . . . .	21.1
1925 . . . . .	20.6	1931 . . . . .	17.3

It is clear from the figures that have been given that consumers' co-operation in the country districts shows a decided tendency to decrease in all respects in the course of the last few years. At this moment it is passing through a relatively acute crisis. This statement is confirmed by the results of the activity of rural consumers' societies in so far as these may be deduced from the heading of profit and loss. A net profit was made in 1929 by 195 societies, or 77 per cent., in 1930 by 179 societies, or 72 per cent., and in 1931 by 133 societies, or 56 per cent.

*The Co-operative Credit Societies.* — At the present time, as before the war, the co-operative credit societies are the most flourishing and most important branch of co-operation in Latvia. In respect of principles of organisation they may be classed, as before, in the category of societies of the Schultze-Delitsch type.

The position and development of these co-operative credit societies will appear from the following table.

Years (31 December)	Rural societies in full working	Membership (thousands)
1922 . . . . .	117	36.3
1923 . . . . .	179	47.3
1924 . . . . .	311	74.2
1925 . . . . .	363	101.9
1926 . . . . .	386	115.1
1927 . . . . .	386	117.8
1928 . . . . .	381	123.0
1929 . . . . .	378	130.0
1930 . . . . .	379	135.1
1931 . . . . .	380	135.6

Although in the course of the last few years the number of co-operative credit societies has remained stationary, the membership on the other hand has shown a constantly increasing tendency.

Grouping the members by social status, it is found that the farmer owners are in an overwhelming majority, representing 74.4 per cent. of the total members at the end of 1931. At the same period 7.1 per cent. of the membership consisted of rent-paying and produce-sharing tenants. It is of interest to note that among the farmer-owners, the group of new farmers who were settled on the land as the result of the agrarian reform of 1920 is steadily on the increase. The proportion of farmers of this group tends to be larger from year

to year, whereas that of the former farmers tends to diminish. For example, at the end of 1924 these farmers of the earlier period represented 59.1 per cent. of the total membership, while at the end of 1931 the percentage was not more than 51.3, notwithstanding that the absolute figure of this group had increased. On the other hand the proportion of the new group of farmers had increased, from 12.5 per cent. in 1924 to 23.1 per cent. in 1931.

The aggregate of the balance sheet totals of the co-operative credit societies shows the following development (by years and in millions of lats) :

1922 (31 December) . . . . .	1.4	1927 . . . . .	48.1
1923 . . . . .	6.8	1928 . . . . .	51.1
1924 . . . . .	22.5	1929 . . . . .	58.4
1925 . . . . .	37.2	1930 . . . . .	62.1
1926 . . . . .	43.1	1931 . . . . .	61.1

The reduction of the balance sheet total in 1931 was the result of the policy of restriction of the credits of the Bank of Latvia and of the withdrawal of deposits.

On the liability side of the balance sheets the following figures will be noted for the main headings (in percentages of the aggregate) :

Years	Capital (Shares and reserve funds)	Sundry deposits	Sundry borrowings
1921 (31 December) . . . . .	9.4	45.5	37.7
1930 . . . . .	16.6	22.7	56.2
1931 . . . . .	17.9	22.0	55.8

Comparing the structure of the balance sheet totals in 1913 and in 1931 the decrease of the deposits is especially noticeable, the decline being from 86 per cent. to 22 per cent. of the aggregate. The explanation lies in the fact that before the war the credits of the State credit institutions were not accessible to the Latvian co-operative credit societies which had to provide for themselves. There has been a great change in these conditions since Latvia became independent.

On the side of the assets a special place is occupied by the loans which at the end of 1931 represented 88.9 per cent. of the aggregate of the balance sheet totals. This relation is comparatively stable, varying between 83.1 per cent. in 1922 to 90.9 per cent. in 1928. It should be added that loans are made to members only. In 1931 3.3 per cent. represented real property and the cash in bank was 1.5 per cent.

As illustration of the results of the activity of the co-operative credit societies some figures may be quoted as to the percentage of the societies which have closed their financial year with a net profit.

Of these there were in :

1922 . . . . .	76.0 per cent.	1927 . . . . .	87.5 per cent.
1923 . . . . .	87.7 »	1928 . . . . .	88.7 »
1924 . . . . .	94.2 »	1929 . . . . .	84.4 »
1925 . . . . .	92.0 »	1930 . . . . .	90.2 »
1926 . . . . .	88.6 »	1931 . . . . .	85.5 »

From these figures it will appear, that this branch of co-operation, as compared with the consumers' societies, shows much better results. In 1931 only 56 per cent. of the consumers' societies closed their financial year with a net profit.

#### CO-OPERATIVE MARKETING SOCIETIES OF AGRICULTURAL PRODUCTS.

Among societies of this type there has been full development of one branch of co-operation only, *viz.*, the dairy societies. Other societies of the same kind, such for example as the co-operative slaughter-houses, have remained in the experimental stage and show no tangible results. The dairy societies will accordingly alone receive consideration here.

In the first place it should be noted that a large number of the dairy societies have, in addition to a central dairy, one or more centres for cream separating worked jointly. These latter centres collect the milk from the neighbouring farms, proceed to separation of the cream and forward the product to the central dairy for transformation into butter.

The progress of the co-operative dairy societies appears from the following figures :

Year	Co-operative dairy societies	Total number of dairies and cream separating centres
1923 (on 31 December) . . . . .	319	455
1924 . . . . .	367	497
1925 . . . . .	422	674
1926 . . . . .	449	901
1927 . . . . .	465	1019
1928 . . . . .	455	1160
1929 . . . . .	450	1331
1930 . . . . .	423	1457

The decrease in the number of the dairy societies is mainly due to the fact that certain weaker societies amalgamated with more powerful societies in the neighbourhood and became cream separating centres attached to these latter.

The number of milk suppliers shows a steady increase. In 1925 there were 27,078 suppliers, in 1926 the number had risen to 38,648, in 1929 to 54,030 and in 1930 to 59,748.

A certain redistribution from the point of view of social standing, noticeable in the grouping of the milk suppliers; the new farmers formed 22 per cent. of the total suppliers in 1925 and 31 per cent in 1930. On the other hand the percentage of the farmers of the earlier period fell from 60 to 51.4 over the same period, showing that the new group continue each year to take a more active part in dairying co-operation.

Comparing the total number of milk suppliers with the number of farms in Latvia, it appears that in 1930 about 30 per cent. of the farms supplied milk to the dairy societies. The percentage varies in the different administrative units or communes from 64.1 to 3.7 per cent.

A comparison between the number of dairy cows belonging to the farmers who are suppliers of the dairy societies, and the total of dairy cows in the whole country, shows that the percentage is 44, varying according to the administrative units from 72.3 to 6.6 per cent.

Not all suppliers are also members of the dairy societies, which receive milk from non-members as well as from members. There is even a relative increase in the number of the non-member suppliers.

In 1928 the number of dairy cows owned by members was 142,823, while in 1930 it was 152,505; non-members owned 121,433 and 165,942 dairy cows in the respective years. Hence in 1930 the number of cows belonging to non-members exceeded by 13,000 the number owned by members of the societies. The explanation of this lies in the fact that the farmers of the earlier period, in whose hands is for the most part the management of the societies, view with some apprehension the growth of the influence of the new farmers, and since they are anxious to retain the direction of the societies, they are very chary of accepting new members, especially if they are new farmers.

*Quantities of Milk Collected by the Co-operative Dairy Societies (1).*

Years	Milk collected (in millions of kg.)	Years	Milk collected (in millions of kg.)
1914 . . . . .	35.6	1926 . . . . .	325.3 (36.1)
1919 . . . . .	2.4	1929 . . . . .	392.1 (36.6)
1923 . . . . .	64.7 (14.9)	1930 . . . . .	479.3 (41.6)
1924 . . . . .	94.9 (18.3)	1931 . . . . .	518.5
1925 . . . . .	172.1 (29.7)		

It will be seen that the part played by the non-co-operative dairies in the dairy industry of the country is relatively small.

The greater proportion of the milk supplied to the dairies is transformed into butter. Thus in 1930 97.3 per cent. of the whole quantity of milk supplied was transformed into butter, and in 1931 the quantity of butter produced was 20,030 tons and 20,072 tons in 1931.

Butter is produced mainly for export. In 1932 Latvia held the seventh place among the butter-exporting countries, its export of butter amounting to 3.34 per cent. of the total world export of butter.

In the course of the last four years, the development of the butter export has been as follows :

Years	Export (in tons)	Value (in lats)
1929. . . . .	14,797	58,648
1930. . . . .	18,431	57,724
1931. . . . .	18,738	46,964
1932. . . . .	18,592	30,990

In 1932 the value of the butter exported constituted 32.1 per cent. of the total value of Latvian exports. It is clear that the dairying industry holds a place of first rank in the national economy of Latvia.

(1) Figures in brackets denote the quantities collected by the non-co-operative dairies.

The financial position of the dairy societies appears from the following figures taken from the aggregate of the balance sheet totals for the year 1930. (At the end of 1930 this aggregate total amounted to 28.6 million lats):

<i>Liabilities</i> (in percentages of the total sum):		
Members' shares (1) . . . . .	11.2	
Reserve capital and other capital . . . . .	13.1	
Reserve for depreciation . . . . .	21.1	
	—	45.4
Borrowed from the State Land Bank . . . . .	31.4	
Sundry creditors . . . . .	16.0	
	—	47.4
Owed to milk suppliers . . . . .		6.5
Net profit . . . . .		0.7
		—
Total . . .	100.0	
<i>Assets:</i>		
Cash in hand and current account . . . . .		3.5
Material etc. in hand . . . . .		3.8
Land and buildings . . . . .	19.7	
Equipment, machines, etc. . . . .	36.4	
Sundry accessories. . . . .	14.0	
	—	70.1
Advances to milk suppliers . . . . .		8.9
Shares held in other societies . . . . .		2.5
Other assets . . . . .		11.2
		—
Total . . .	100.0	

*Mutual Fire Insurance Societies.* — Like the other co-operative societies, the mutual fire insurance societies were obliged to suspend activity during the war, but as soon as possible afterwards were reconstituted so that shortly after the whole country was covered with a close network of co-operative societies of this kind.

The following figures indicate the course of development of these societies:

Years (31 December)	Societies	Members (thousands)
1920 . . . . .	17	1.9
1921 . . . . .	67	7.6
1922 . . . . .	203	22.9
1923 . . . . .	312	40.4
1924 . . . . .	338	49.3
1925 . . . . .	353	55.4
1926 . . . . .	371	62.8
1927 . . . . .	389	67.6
1928 . . . . .	392	73.5
1929 . . . . .	392	79.1
1930 . . . . .	397	83.8

(1) The total of members' shares is in relation with the number of dairy cows and also with the quantity of milk supplied.



Out of all the farms 36.5 per cent. only members of mutual insurance societies, while the others are insured with commercial insurance companies — all farms being obliged by law in Latvia to take out insurance of this type.

The amount of the insurances shows a constant tendency to increase.

The following are the figures (in millions of lats):—

1920 . . . . .	9.5	1926 . . . . .	179.9
1921 . . . . .	1.8	1927 . . . . .	212.5
1922 . . . . .	22.7	1928 . . . . .	240.6
1923 . . . . .	58.2	1929 . . . . .	288.3
1924 . . . . .	95.4	1930 . . . . .	329.9
1925 . . . . .	133.7		

The financial results of the activity of the insurance societies are very satisfactory. Expressed as percentages of the total premiums paid the losses caused by fire were 23.1 in 1925, 50.3 in 1929, and 40.3 in 1930. In consequence the societies have been able to accumulate very considerable owned capital. It may be noted that mutual insurance societies do not require members' shares to be paid up.

The following figures show the growth of the total owned capital of the mutual insurance societies (in thousands of lats):—

1920 . . . . .	1	1926 . . . . .	1042
1921 . . . . .	12	1927 . . . . .	1410
1922 . . . . .	102	1928 . . . . .	1873
1923 . . . . .	251	1929 . . . . .	2225
1924 . . . . .	425	1930 . . . . .	2265
1925 . . . . .	700		

The aggregate of the balance sheet totals in 1930 of all the mutual fire insurance societies was 3.3 million lats. The greater proportion of the liquid money is deposited in local co-operative credit societies. The total amount in 1930 was 1,735,000 lats. Peasant farmer savings thus remain in the hands of the farmers themselves.

*Central Unions of Co-operative Societies.* — As already stated the Russian Government prior to the war would not permit central unions of co-operative societies to be formed by Latvian co-operators. Not till 1906 was permission granted to form the Central Farmers' Union at Riga (now the Central Farmers' Society of Latvia), the main function of which was to group the farming societies, or the societies exercising supervision over stock breeding and dairy production, as well as other societies of the same kind for diffusion and promotion of agricultural information among the peasant farmers. This organisation has done very valuable work in this connection, and its value has also been very great in respect of the diffusion of the co-operative idea, since it has taken the initiative in a number of co-operative enterprises and has done much to bring about practical results.

It was not till after the war, when Latvia became independent, that it was really open to the co-operative societies to establish central unions. Each

of the four branches reviewed above has established its own Central Union : (1) consumers' co-operative societies and some other co-operative societies, the Central Society " Konzums " ; (2) the co-operative credit societies, the Peoples' Bank of Latvia ; (3) the dairy societies, Central Union of Dairies of Latvia ; (4) the mutual fire insurance societies, Central Union of Mutual Insurance.

In addition there have been founded some other central unions the importance of which is however relatively small.

A brief survey of each of these Unions will now be given, but it may be stated in passing that their foundation is considered as very characteristic for Latvia. Each one of them has a propaganda section which is usually known as the Instructors' Section.

These sections carry on general propaganda work, and also organise courses, lectures, audits, inspections, etc.

(1) The " Konzums " Central Union. — This union is mainly a purchasing joint wholesale society. It supplies to the consumers' societies and to other rural co-operative societies both the various commodities required by the small farmers as well as farm requisites. In addition the " Konzums " has become a joint marketing enterprise for farm products, especially butter. This Union has also erected at Riga two slaughter-houses for the slaughter of pigs for export, one with a capacity for 50,000 pigs per annum, and the other for 120,000. The pigs are not sold on a co-operative basis, the " Konzums " undertaking these sales at its own risk.

A certain diversity of this kind in the operations of the Union is due to the changes that have taken place in the circumstances and composition of the membership. The " Konzums " is the earliest of the central unions of the co-operative societies, and in consequence it has been called upon to satisfy various requirements of a co-operative nature among the rural population.

At the end of 1931 the " Konzums " grouped : 206 consumers' societies (about 80 per cent. of the total of the rural consumers' societies), 57 farming societies, 54 dairying societies (about 12 per cent. of the total) and 20 co-operative societies of various types, making a total of 337 co-operative undertakings.

In 1931 the " Konzums " sold commodities to the value of 22.4 million lats. The turnover decreased by more than 50 per cent. as compared with the previous year.

The following points may be noted in the balance sheet of the " Konzums " for 1931 : 1. very small funds of its own (3.8 per cent.), 2. a large sum under heading of borrowers (27 per cent.), 3. very large sums invested in real property and in undertakings.

With such a balance sheet it is clear that the organisation can exist only in periods of economic prosperity. The disastrous fall of the turnover brought about by the general economic crisis and the failure to secure repayment of loans from borrowers involved the " Konzums " at the end of 1931 in financial difficulties. The management of the Union passed into the hands of an administrative body appointed by the creditors. The co-operative societies grouped in the " Konzums " merely retained the management of the propaganda section, and accordingly the Konzums Central Union has become a non-profit

making enterprise, as the direction of the financial operations is assumed by the creditors. The plenary meeting of 1933 resolved that each society should pay 10 centimes per member per annum for the requirements of the propaganda activities of the "Konzums".

(2) Peoples' Bank of Latvia. — This Bank acts as the Central Union of the co-operative credit societies, and is constituted as a limited liability company. Shares may be taken up by the co-operative societies, the municipal and communal administrations and the societies and associations without view to profit. If by some means the bank shares pass into the hands of other persons, these latter have no vote at the shareholders meetings. The maximum voting power of a single society is five votes. On 1 January 1933 the membership of the Peoples' Bank of Latvia was as follows:—

(1) Co-operative societies:—	
(a) credit co-operative societies . . . . .	371
(b) consumers' co-operative societies . . . . .	114
(c) other co-operative societies . . . . .	123
	<hr/>
(2) Municipal and communal administrations organised . .	606
(3) Societies without view to profit (educational and others) .	189
	<hr/>
Total . . .	866

The Bank is in a prosperous position, and from its foundation in 1920 to the present time it has closed all financial years with a net profit.

The principal operation on the side of assets is that of loans, mainly by the discounting of bills of exchange. On 1 January 1933 the loans represented 67 per cent. of the assets, the balance sheet total being 3 million lats. The loans were distributed as follows according to the principal groups of members:—

(1) to co-operative societies . . . . .	93.0 % of the total loans
(2) to municipal and communal adminis-	
tions . . . . .	4.5 %   "   "   "
(3) to educational societies and associa-	
tions . . . . .	2.5 %   "   "   "
	<hr/>
Total . . .	100.0 %

Among the co-operative societies the first place is occupied by the credit societies, loans to which are 58 per cent. of the total loans.

The following are the main items of the liabilities, expressed in percentages of the aggregate of the total balance sheets:—

shares . . . . .	23.3 %
reserves and other capital . . . . .	5.8 %
sundry deposits . . . . .	34.8 %
sundry borrowings . . . . .	30.0 %
other liabilities . . . . .	6.1 %
	<hr/>
Total . . .	100.0 %

The balance sheet totals of the Bank for the last three years have been (in absolute figures) :—

in 1931 (on 1 January) . . . . .	Lats	3,532,583
1932       "       . . . . .	"	2,977,546
1933       "       . . . . .	"	3,004,647

The present situation of the Bank is sound.

(3) Central Union of Dairy Societies of Latvia.— This Union was founded in 1921. Its development was very rapid. At the end of 1921 it grouped 13 dairy societies while in 1932 the number had risen to 259, or 65.9 per cent. of all the dairy societies in activity at the end of 1932. The Central Union of Dairy Societies mainly undertakes the export of butter. In 1932 it was exporting 59.6 per cent. of the whole quantity of butter exported.

The Union possesses a milk transformation depot at Riga which supplies milk and milk products to the town population. In 1932 milk and dairy products were supplied to more than a thousand creameries and shops, to 52 schools, 122 societies and various institutions. In the course of the year in question milk and dairy products were sold to the interior of the country to a value of more than 2 million lats.

In addition the Union undertakes the equipment of dairies, supplies them with the machines and fittings required and also undertakes the supply of concentrated stock feeds.

In general the results of the activity of the Union must be described as good, seeing that each year has closed with a net profit.

In the course of the last three years the balance sheet totals of the Union have been :—

in 1931 (on 1 January) . . . . .	Lats	4,013,922
1932       "       . . . . .	"	3,564,235
1933       "       . . . . .	"	3,277,800

The financial position of the Union is sound ; on the last balance sheet, the owned capital (members' shares, reserve and other capital) represented 44.93 per cent. of the total.

(4) Central Union of Mutual Insurance. — This Union was founded in 1922 by 15 co-operative societies, with a total membership in the following year of 169. At the end of 1932 the Union consisted of 564 co-operative societies, including 363 insurance societies, 76 consumers' societies, 76 dairy societies, 7 central societies and 49 co-operative societies of various types.

The Union effects operations of two different kinds : (a) re-insurance of the risks undertaken by the mutual insurance societies, and (b) direct insurance of risks for other co-operative societies.

According to the nature of the risks insured, the operations of the Union fall under the classes of : fire insurance, farm live stock insurance and life insurance.

There has been a beginning made only in regard to the two latter types of insurance, so that the Union's activity as a whole is in fact represented by the fire insurance operations.

In 1932 the total risks re-insured amounted to 206 million lats as compared with 182 million lats in 1931, while the total direct risks insured in that year amounted to 29 million lats as compared with 20 million in 1931. In the course of the last ten years the value of compensation payments made represented on an average 53 per cent. of the premiums paid. The average rate of premiums fell in 1932 by 27 centimes per 100 lats of risks insured. In the course of the last ten years it has fallen by about 60 per cent. The Union rates are lower than those of the commercial insurance companies.

The balance sheet total of this Union shows a constant tendency to increase:

1923. . . . .	20,500 lats
1925. . . . .	143,300 »
1927. . . . .	274,700 »
1929. . . . .	503,500 »
1931. . . . .	600,600 »
1932. . . . .	605,100 »

On the liabilities side of the last balance sheet the funds of the Union, *i. e.*, capital, special funds and premium reserves, constitute 72.9 per cent. of the balance sheet total. On the side of the assets cash in hand and current account constitute 30.7 per cent. and real property 49.6 per cent. of the total.

The position of the Union is entirely sound, the more so that the Union risks are re-insured in foreign countries.

#### GENERAL VIEW OF THE POSITION OF AGRICULTURAL CO-OPERATION IN LATVIA.

From the account that has here been given of agricultural co-operation in Latvia it would appear that the development has been on the whole on sound lines, the position of consumers' co-operation in the last few years alone giving rise to anxiety as to its future. This branch of co-operation is however still represented by more than 100 societies in full working, or double the pre-war number, so that it may safely be anticipated that in a not distant future, when the severity of the economic crisis is relaxed, this branch will resume its proper place along with the other branches of agricultural co-operation.

*Legislation Regulating the Activity of the Co-operative Societies.* — Before the war the foundation and the activity of co-operative societies in Latvia almost entirely depended on the will of the Russian administrative authorities, which greatly militated against the progress of the movement. With the independence of Latvia all legal and administrative impediments disappeared. The juridical position of co-operation is determined in Latvia by: (1) the regulations issued in 1919 on co-operative societies and their unions, and (2) the law relating to the auditing of the accounts of co-operative societies of any kind and of their Unions, passed in 1927.

By the terms of the former measure a co-operative society may be formed by 7 persons, and a union of co-operative societies by three societies. Co-operative societies are registered at the office of the district tribunal, the rules being at the same time deposited by the persons founding the society. The district tribunal has no power to refuse registration except in cases especially defined by the law. The co-operative society must be registered or registration refused within the period of one month from the day on which the rules were deposited. In addition the law contains general and universally recognised provisions in regard to the rights of members of the societies and their duties, the constitution of the capital of the societies (*e. g.*, societies may be formed with or without members' shares, every year at least 20 per cent. of the net profit must be paid to the reserve capital), the managing bodies, the distribution of the profits and covering of losses, and liquidation.

By the terms of the law of 1927 every co-operative society is obliged to submit to an audit of accounts, which must take place at least once in every two years, under the general direction of the auditing Council. This Council is attached to the Ministry of Justice and is under the direction of the Minister. It consists of members appointed by the Government and of representatives of the co-operative societies which have auditing rights, these latter being always in the majority. The Central Unions of co-operative societies possess auditing rights as well as the co-operative auditing unions specially founded.

## INSURANCE

### **Agricultural Insurance in relation to International Action.**

The question of agricultural insurance has as a rule been considered either incidentally in its relation to general agricultural science or agrarian policy, or else as a specific branch of insurance. It is characteristic of agricultural insurances that on the technical side they are in very simple form, and that in the past, as still also at the present day, the methods of carrying out propaganda and the action taken for the extension of business have been, more strongly than in any other branches of insurance, influenced by considerations of policy — in this case either general or purely agricultural policy. Herein lies the explanation of the fact that technical considerations have been reduced to a minimum, and also that the first care was to adapt premiums to the paying capacity and income of the farmer. In the case of *Hail Insurance*, the attempt to make an exact calculation of the annual premiums has encountered the difficulty of the varying character of the losses sustained over a series of favourable and unfavourable years. Similarly for *Live stock Insurance*, the possibility of actuarial calculation of the amount of the premium has been seriously compromised by the part played personally by the individual owner in determining the extent of the risk, even in countries well provided with sound veterinary service and an extensive machinery for dealing with epidemic diseases.

In most countries agricultural insurance was already in vogue before the development of modern technique and the growth of business had brought about

a true science of insurance. It is a matter of common knowledge, for example, that live stock insurance is one of the oldest types known. In the field of insurance, the agricultural branch has always occupied a place apart, because, as already stated, the principles on which it is based are not completely in accord with the rules of scientific insurance. In many countries too, it takes a form very different from normal insurance business. It would however be a mistake to say that intrinsically agricultural insurance does not lend itself to an international examination, or organisation, of its principles. Such a statement would be true only in so far as such examination, or organisation, must make its starting point the interests and requirements of agriculture itself and must not be undertaken from the standpoint of scientific insurance. This is a subject which the International Institute of Agriculture might handle very properly and to great advantage.

It is now proposed to discuss hail and live stock insurance, treating these as two separate and distinct branches.

#### (A) HAIL INSURANCE.

Hail Insurance was instituted by farmers for farmers. It is true alike of the early Scottish Friendly Societies, of the "Braunschweiger Schlossenschadenassuranz" of 1791 and of the French "Société d'assurances reciproques" that the co-operative idea of mutual assistance among persons belonging to the same calling inspired the foundation of the first hail insurance institutions, which were closely adapted in rules and general organisation to the actual conditions of the farming profession.

In Prussia, as in France and Italy, and with a similar motive, *viz.*, the desire to assist agriculture, the authorities did not hesitate to make contributions from State funds, so as to guarantee to farmers the benefits of an insurance of their crops against hail damage, in return for yearly payments of nearly equal sums. Although such efforts did not always meet with lasting success, there has been none the less everywhere a ready recognition on the part of Governments of the advantages of hail insurance, as affording continuous security for farming operations. Moreover as the farmers both felt the need of and desired this form of insurance, they themselves made constant efforts to initiate the necessary institutions, or, if they were without the resources or the adequate technical organisation for the purpose, they urged the State authorities to pass the required measures. From the fact that hail insurance is usually organised in all countries on a mutual basis or by public utility undertakings, its prevailing character is that of a non-profit-making enterprise. Even the competing commercial insurance companies take into account this special character in their methods of business, and in this branch of their operations postpone the consideration of their own profits to that of the satisfaction of the needs of the farmers, frequently continuing operations in spite of very considerable capital losses.

Since returns from agriculture in all countries make it essential that premiums in this branch of insurance be kept decidedly low, the funds available are insufficient for proper investigation of the causes of hail damage.

For this reason it can readily be understood that, although there has been a series of particularly disastrous seasons, very little progress has been made in most countries in the knowledge of the origin and course of hail storms. Moreover since hail takes no count of political frontiers, there is scope and in fact an urgent need for international investigation into the causes of hail. Some idea of what can be accomplished in this field may be gained from the comprehensive and admirably designed researches of the National Meteorological Institute of Poland at Warsaw (1), which endeavours to make scientific and systematic observations, with the collaboration of all interested parties, of the routes followed by hailstorms, their distribution over the various districts, their severity and frequency. In Prussia also observations are taken at the meteorological stations of the dates and intensity of hail precipitations, and are forwarded to the Central Meteorological Institute; but unfortunately for some decades past there has been no elaboration of the data so supplied. Some preliminary work has thus been accomplished (2), and furthermore for some years past the German hail insurance societies have added the dates of the occurrence of the damage to their register of compensation payments effected with a view to a later utilisation of the material, though up to the present no tangible results have been reached.

The statistics established in the United States of America in regard to the damage done to crops by various weather influences, represent rather a registration than an explanation of the facts. More is to be learned on the subject of the effects of hail from the excellent annual reports of the *Schweizerische Hagelversicherungsgesellschaft* in Zurich and from some publications in the Balkan countries (3). A useful summary, although rather from the standpoint of the technique of insurance, is given by KOLAR (4).

It would be of interest and value to all countries that suffer from hailstorms to gain information as to the origin and course of the storms and as to the influence exercised on the formation of hail by forests, waters, mountain ranges, etc.; and also to learn the relation which exists between hail and the level of subsoil waters. Special importance also attaches to an investigation as to the extent to which electric transmitters, wireless installations, and, generally speaking the increase in utilisation of energy derived from the atmosphere, may tend to promote the occurrence of hail. The solution of this problem is of considerable importance as regards the establishment of market gardens in the neighbourhood of large towns or of works using high tension current. In Germany it has been possible to observe over a period of years a marked increase in the occurrence of hail, and an aggravation of hail damage experienced in garden layouts exposed to electric current.

(1) R. GUMINSKI, Grady, W. R. 1930 *Polsce*, Warszawa 1930; also for 1931.

(2) In the Report of the Head Office for Plant Protection in Landberg (Warthe) for 1927-28 on hail damage in North Germany 1927-28.

(3) Vlaicu, Zonale Grindinoase diu Nord-Vestul Romaniei in 1928 și 1929 *Annuarul* 1929, Bucuresti 1930, and Dvadestwo Dischnik of the Bulgarian Central Co-operative Bank (1911-1930) Sofia 1931

(4) Zemědělské Pojistě ní nás za Hranicenni. Prague 1930.



Much could be learnt as to the most suitable types of cultivation in districts particularly exposed to hail risks from a systematic enquiry into the true nature of these risks. From time to time doubts have been expressed on the advisability of growing crops specially liable to damage by hail in zones regularly exposed to hail storms, and it is emphasised that it is the common interest to effect an adaptation of cultivation to climate in such zones; as otherwise the claim for insurance protection is made at the expense of the whole community. Up to the present however no such request for changes in cultivation has ever been made in the areas affected.

Information on the relation between the period of growth and the observed dates (approximate) at which the hail storms occur in the different countries would also be of great value. It will no doubt be possible to achieve in certain districts, by means of selection of varieties, a shortened ripening period and therewith a time limit to the risk of hail damage. It would be of interest to learn how far the increasing use of harvesting machinery has had a favourable effect on the hail risk or may modify it still further.

If an intensive, uniform and lasting collaboration between all the countries concerned is adopted, it will become possible to investigate the causes of formation of hail and its relation with cosmic changes, and to make a knowledge of these causes accessible to farmers. In view however of the present necessity for economy in all scientific research work, the initiative for work of so wide a scope must come from the farmers themselves as the class likely to profit by the results.

Passing on from the study of the phenomenon of hail to that of hail insurance, another subject on which exchange of experience might be very useful is that of the principles underlying the fixing of premiums, or variation of premium rates according to risk. It is well known that in most countries the premium is variously calculated according to the frequency of hail storms in the particular locality, and also according to the extent to which any particular crop is liable to hail damage. It does not appear, however, that there are any uniform and exact principles for such a fixing of rates although, in view of the peculiarly uniform nature of the object insured, these should undoubtedly exist.

How in fact is the basic local premium calculated in the different countries? What are the fundamental principles on which the hail insurance companies work? In nearly all countries there may be found, for long periods, sometimes even for more than a century, an exact record of the losses covered and occurring in the various local administrative areas. Nor does each undertaking merely confine these statistics to its own transactions, but results are also exchanged with rival companies, thus making them available for the purposes of hail insurance business in general. The information which the hail insurance undertakings do not possess however is that relating to the losses experienced by the non-insured farmers and their extent. Attempts have been made in isolated cases to establish official statistics in reference to these uninsured losses, but such data are not as a rule trustworthy and in any case are very scanty.

Rating of the separate risks may be based on a number of different considerations. In the first place the risk may be considered in itself. In this case

provision should be made for an actual cover from the premiums paid of any losses that may occur. This policy would involve investigations extending over a prolonged period, and trustworthy results would be obtained only if the risk had remained continuously insured. Such a consideration of the individual risk is not however compatible with the compilation of statistics, on account of, *inter alia*, the changes that may take place in the different areas under cultivation.

Another possible method would be to group the risks by communes and large estates, and to establish the basic premiums for these risks on the total losses sustained by all the interested parties. But since the number of persons insured in these minor administrative areas is by no means of necessity large, a premium tariff based on the compensation requirements of each area would in practice very nearly correspond with a separate estimate of each individual risk. The working out of a general premium tariff is facilitated only when it takes into account not such small areas as the commune, but the larger area of which it forms a part, such as the canton, department, etc. which in the course of time is bound to find some method of averaging risks.

Even this method of tariff-fixing however will tend to fail in the majority of countries, since cantons and departments require and always will require some supplementing from State funds. Such, for example, is the case in the first place in countries where hail risks are slight and where the premiums, originally fixed at a low rate in normal years, are insufficient, even after a long period, adequately to meet the high claims of particular areas paid in certain years during which severe storms have occurred. The same is also true for countries where the average hail risks are considerable. Here hail policies are chiefly subscribed in the areas most exposed to the risk, which look to the whole country for the settlement of their claims. The calculation of the basis premium for the district, commune or large estate naturally does not exclude an increase or reduction of their respective premiums for the individual risk.

Another possible way of arriving at a premium tariff may arise in the case of a country in which there are insurance undertakings operating only within the country. The point of departure would be the average of the sums required for meeting claims taken over a fixed period and an average premium to cover the average calls as a whole, plus expenses of administration and the risks of exceptional damage in particular years. The tariff for the different communes and estates could be fixed by taking into account the relation to the total requirements of the country in question. In countries where, owing to the existence of a State system or monopoly companies, combined with compulsory insurance, the totality of risks can be taken into account, it is particularly easy to carry out a continuous adaptation of the figures to the latest results in the years on which the tariff is based.

A knowledge of the principles on which the premium rates of the insurance societies in their own country are based would be of great value to the farmers, as enabling them to make comparisons with the rates in other countries and to use their influence for arriving at a general uniformity. In certain countries which already jointly possess hail insurance bureaux, uniformity in the princi-

ples underlying premium tariffs is already well advanced and in the interests of the farming class it is much to be hoped that such uniformity may become universal. The farmer is naturally interested that the paying out capacity of his insurance society is not weakened by the competition of different kinds of societies, if only to be able to feel assured that any claims of his own will be met in full. It is not intended to exclude competition altogether but merely to ensure that it serves a useful purpose. A sufficient field for competition is always left in the differences between conditions of insurance, the reductions, rebates granted in favourable seasons and concessions as to methods of paying premiums. If there is no uniform system in premium tariffs and if the premium required is driven by competing companies below the limit of a proper actuarial calculation, after a series of years of frequent and destructive hailstorms the effect will be felt by the farmer. It will then become necessary to raise the premiums beyond his capacity to pay, or else the insurance companies will no longer do business in the areas where the risk is greatest, and the result may be an insufficiency of insurance facilities as the remaining societies will no longer be able to cover the full risks of certain regions.

There is a great risk of arriving at an impracticable premium tariff on the part of mutual insurance societies, which obtain their contributions under the form of call premiums and subsequent payments, but fix their premium tariffs on the amount of call premiums alone without reference to the total contributions and accordingly without considering the further payments that may be required. Such a system is absolutely unsuitable for any kind of agricultural insurance, being neither serviceable nor convenient, and designed simply with a view to increased profits. In such a branch of insurance as hail insurance, competition should have nothing to do with any kind of premium tariff not based on the realities of the case, as otherwise it can be carried out only at the expense of the farmers themselves, who in most countries are in no position to meet any unproductive expenditure. Competition should rather on the other hand have regard to the reduction of administration costs to a minimum, since agriculture can only find the guarantee for the safeguarding of its interests when expenses are kept at the lowest possible limit. A particularly valuable premium tariff is offered to its clients by the "Gazdak" Society in Hungary, in which every year there is set out a detailed tariff arranged both by localities and according to a system of classification of crops.

It should be added for the sake of completeness that in certain countries the idea of local adaptation of the premium tariff is set aside altogether, and the basic premium is calculated on the area of the farm. It is unnecessary to explain in detail that this system involves a serious injustice for farms situated in districts where hail risks are slight. It would however be useful to know whether in countries where such a system obtains, hail insurance makes regular progress, or whether it is not rather the case that this system tends to encourage the speculative instincts of the farmers, who will be inclined to insure their crops for a short period, and only after having experienced losses through hail, whereas after a period of freedom from such damage they will not renew their policies. Even though in these countries there may be differential rates for different

kinds of crops, yet even so these rates will not suffice to cover completely the individual risks.

An international exchange of views and experiences would again be highly valuable in dealing with the question of the adaptation of the premium in hail insurance to the degree to which different crops are liable to damage by hail. Any student of the development of the technical side of hail insurance from its earliest beginnings will be struck by the change that has come over the attitude towards the liability of different crops to hail risks and particularly by the difference in the treatment of certain crops, such as roots, flax and hemp, and certain cereals such as oats. There is no longer any uniformity in the classification of crops, and while for hail insurance purposes certain countries group all cereals alike in a single class, there are others that adopt quite another method. How long a time, for example, has it taken Germany to become convinced that the peculiar liability of oats to hail damage justifies its inclusion in a special category. The competition between the separate insurance undertakings lasting over many decades has been the real obstacle preventing a proper classification of the different kinds of crops. There are probably few hail insurance companies that are really capable of checking the accuracy of their classification of field crops by means of a long series of data derived from their experience. At the same time it would be greatly to the advantage of agriculture if, in all countries, some at least of the chief companies could be induced to institute a regular checking of the scales adopted for field crops which are now somewhat arbitrary. It is however essential to take into account the relative importance of the different varieties, for it may happen that liability to hail damage may decrease in the course of years, thanks to the preference given to the more resistant varieties (1).

A further consideration is the *diversity of the conditions of insurance as regards various crops*. In this respect also from the farmers' point of view a certain unification in the principles of the insurance contract seems desirable. It is difficult to understand the reason for the diversity of the terms for the beginning and the end of the cover. As regards any extension or limitation of liability for the insurance of the different crops, it is likewise to the interest of farmers, who in this matter should have a decisive voice, that there should be the possibility of differentiating the individual crop rates, while at the same time respecting the exigencies of insurance technique. It would also be highly desirable to have a detailed report upon the relation between straw and grain value in the various cereals and field crops, and such a study would help to settle an old controversy between the insured persons and the insurance company. In this connection, however, the principles only for the determination of the relation between these values can be established internationally while the data would have to be calculated separately in the individual countries.

This last question brings up a further point. Up to the present the general problem of *hail insurance* has never been considered from the point of view of *farm finance*. How far can production and marketing support the expense of

(1) ROHRBECK - SCHLUMBERGER: Die Schätzungsgrundlagen bei Hagelschäden p. 13.

hail insurance? Is it possible to pass on the charge to the purchaser of the crop? How far again is it possible to pass on the cost of the premium, if there are taken into account the fertility of the soil, the extent to which the area is liable to the risk and whether the crop is sold in the open market or under the conditions of a forced sale? What is the true bearing of hail insurance on the soundness of the farm credit, and in this connection can it properly be met even if it is doubtful whether the insured person can pass it on to other parties?

What is the economic advantage of a quick settlement of claims by the insurance company to the farmer who as the result of the hail damage may effect a saving in respect of harvesting, storing, threshing, transport and marketing of the crops? Do such financial advantages justify a deduction from the payment of the claim such as is customary in certain countries? Would it not be feasible to check the accuracy of the farmer's valuation by taking threshing samples annually? It might be expected that such a system of tests would tend to increase the confidence of the farmers who are distrustful of insurance, and render them more disposed to take out policies.

It is well known that in 1932 a dispute arose between the insurance undertakings and the supervising authorities in regard to the introduction of the so-called non-liability clause, which has been customary for some years past in a certain number of countries. No investigation of the influence of this non-liability clause on farm finance has yet been carried out. It is of course indisputable that the burden of the hail insurance premium, where there is an obligatory non-liability clause *without* reduction of premium, is much greater than where there is such reduction, especially in neighbourhoods where the average hail risk is slight. It is for this reason that when the non-liability clause was finally adopted in Germany, it was combined with a reduction in the premium. The extent of this reduction is calculated however at present from the standpoint of technical insurance only, and the non-liability clause itself has not yet been investigated from the standpoint of the farm finance.

The problems for scientific investigation already indicated are very varied, nor are they limited to the questions that have been briefly discussed here. The solution of these problems lies in the sphere of the compulsory accountancy prescribed for farm undertakings, and consequently a uniform solution for all countries cannot be found. The mere enumeration of these problems, which, seeing that hail insurance has now existed for more than a century, ought no longer to be problems, shows how little up to the present the whole problem of hail insurance has been considered from the point of view of farm economy, in other words, of the capacity of the farmer, in view of present day prices and wages, to meet these insurance charges. The result of the investigation from this point of view *either* will be decisive for the future of hail insurance in so far as its further extension and development will depend on such investigation, *or* will have an influence on the formation of cereal prices. In any case, agriculture is deeply concerned in the settlement of these questions, and such settlement is essential to an intelligent, confident and active collaboration between the farmer and the insurance institutions established for his benefit.

In this way there will also be provided a means of examining into the financial situation of the hail insurance undertakings. For many of these in all parts of the world, and particularly for the larger institutions, costs of administration at the present time are extremely high. In countries where distances are great, means of communication inadequate and costs of expert inspection very heavy, the high cost of administration can be reduced only by degrees as the economic development of the country proceeds. In other countries, the high costs are due at least in part to faulty administrative methods. A thorough examination of these administrative questions will facilitate a calculation of the maximum proportion of these costs that can be borne by agriculture. The farmer, it is true, in his present critical position tends to consider any charges of the kind as unproductive expenditure. In the last resort the question is one of farm organisation. It is accordingly not surprising that in many countries the question has been raised recently whether in this branch of insurance an introduction of compulsory insurance might not reduce the high costs connected with obtaining new business and the other administration expenses of the insurance companies, and thereby improve and render more uniform the settlement of claims. In this connection it may be considered advisable to include hail insurance institutions in the occupational organisation of agriculture.

Such questions demand very close examination, since a complete transformation of existing institutions is involved, such reform being especially indicated where the failure to adopt new methods may well lead to a shortage in insurance facilities.

An enquiry into the costs of administration of hail insurance companies of the different countries and an international pronouncement as to the extent to which such costs may properly be assigned to agriculture, would be of great value, and would act as a stimulus to the reform of methods of insurance business in quarters where previously this question has not received the attention it merits.

Still another question appropriate for international exchange of experience is the valuation of hail damage, a far-reaching question and only within the last twenty years studied in detail and on scientific lines. It is well known that in Germany the *Biologische Reichsanstalt* has arranged for a report on some detailed investigations on the effect of hail damage on plant growth and crop yield. No special attention has been paid to these results, and no other scientific institutions have published parallel investigations. An extension of such enquiries would supply more accurate information on certain problems, such as the increased liability of plants that have suffered hail damage to disease, the importance of selection of varieties resistant to hail damage, the possibility of recovery from severe injury at an early stage in growth if subsequent climatic conditions are favourable, the identification of hail damage as distinguished from other possible forms of damage.

The results of valuation of hail damage should be checked by the farmers themselves in the way already mentioned, *viz.*, by means of samples taken at threshing time. In particular, cases of slight and moderate damage should be so checked. It is not improbable that there may well have been in many cases

fundamental overvaluation of damage, thereby justifying the introduction of a non-liability clause in countries where such a clause is not yet in force. Once again, economic enquiries would usefully supplement those of a purely agricultural character.

In countries in which the management of hail insurance is purely technical and exercised without reference to agricultural bodies it would appear to be too one-sided and too remote from the real needs of agriculture for any chance of development of such a kind as would assist production and serve the farmer's true interests. A closer connection of hail insurance with agricultural institutions, whether State or co-operative in character, would be of advantage. Such closer union would make it more practicable for the International Institute of Agriculture to make proposals and to carry out enquiries having reference not only to the purely technical aspect of hail insurance but also to its economic and agricultural importance.

#### (B) LIVE STOCK INSURANCE.

Whereas the phenomenon of hail is independent of human action and in consequence the technique of hail insurance is essentially determined by objective considerations, the effective operation of live stock insurance depends largely on the attitude of the stock owners, and on the possibility of reducing to a minimum the claims into which a subjective element of any kind enters. Such claims include not only attempts, due to financial embarrassment, to defraud the insurance companies, but also defects in the veterinary inspection systems of national governments. It is obvious that live stock insurance cannot be successfully operated, where it is possible for diseases of stock to be introduced and to spread through a whole country. The primary condition of sound live stock insurance is that public authorities and private individuals alike exercise a proper control over epidemic diseases.

An international enquiry into systems of live stock insurance throughout the world must accordingly start from a critical examination of the veterinary control of diseases of stock. The development of this control is essential to the general purposes of agricultural policy in all countries, and also acts as an effective means of maintaining capital engaged in farm undertakings. This dependence of live stock insurance on State institutions of veterinary inspection adds to the difficulty of any international comparison of live stock insurance institutions in the various countries. The possibility of such an enquiry is not however thereby entirely precluded. It would of course be a mistake to attempt to regulate live stock insurance from the farming standpoint only, since this would mean neglecting the protection of the interests of the non-agricultural owners of stock. This latter consideration again renders difficult the technical organisation of insurance.

It has been the experience in every country in which this branch of insurance is practised, that it is impossible to dispense with definite control of rural owners of live stock in regard to the care and to the marketing of their animals. Such control is effectively exercised through small local unions,

wherein the farm management of each individual owner comes naturally under the observation of other owners. There is usually a large number of local associations of this type, the only drawback being that they do not possess sufficient funds for the payment of any heavy claims for compensation that may arise. Re-insurance has been tried as a means of remedying this weakness, but the tendency is for these small associations to group only farms of the same type. The inclusion of large estates and public lands in such associations is inadvisable on account of the non-comparable nature of the risks, apart from the consideration that the widely differing economic interests of farms would render any insurance operations very difficult. The position of stock owners who are engaged in some urban occupation is quite different from that of the rural stock owners. Their predominantly commercial outlook makes them careful in the handling of the animals that constitute their working capital. The main preoccupation of the insurance companies, in respect of this class of owners, is the likelihood that premature mortality may result from intensive and continued working of the animals for commercial or industrial purposes. Grouping of such risks in local urban associations would be more practicable than a similar local grouping of the rural stock owners. The problem of the most effective organisation of live stock insurance has not yet been satisfactorily solved, and it would be highly desirable to undertake an exchange of experience as to partial solutions of any of the points indicated reached in various countries. It might thus be possible to arrive at a more uniform and a more permanent structure of live stock insurance.

A feature in live stock insurance is the considerable number of changes in ownership within different organisations. As this fact greatly increases the costs of insurance business, it militates against extension to uninsured areas.

It may be further noted that the study of live stock insurance from the point of view of farm finance is still but little developed. The opinion is often expressed by large farmers that live stock insurance is a matter for small farms only, an opinion however which has not so far been put to the test.

The combination of long and short term risks in live stock insurance introduces a complication into the operations taken as a whole in respect of the compensation claims. Live stock mortality insurance is properly a long term insurance only. It is mainly conducted by a mutual basis, the associations employing a system of call premiums and supplementary payments as a means of assuring the required total of contributions. The short term insurances that accompany the main insurance – for example, those against thefts of grazing stock, transport and exhibition risks, operation or gestation risks, etc. – are not adapted to such a system, and are for the most part arranged on the basis of fixed premiums. The danger for the business of live stock insurance, as a whole, is that the short term insurances will increase disproportionately, and that if a number of these claims occur, the members of the mutual associations may become liable for risks of persons who are no longer members. Such liability is clearly more than should be expected of the already heavily overburdened farming class. The determination of a due proportion between long and short term insurances is much to be desired. In this connection, it might be possible to consider,



whether as regards certain short term insurances, such as, *e. g.*, insurance against show risks, transport risks, etc., international model contracts could be prepared, designed to prevent undercutting premiums on the international market.

It will be recognised that in live stock, as in hail, insurance the administrative costs of the insurance companies are a matter of special interest to farmers. A collaboration between insuring institutions in the different countries would probably contribute to a reduction of these costs, and in the interests of agriculture it would be desirable that on the international side attention should be given to this matter. In so far as the control exercised over insured persons for the prevention of unjustified claims tends to swell costs, the question might also be raised whether extension of owner liability in cases of loss or damage would tend to equalise matters. This problem, however, can find a solution only in relation to the market prices of live stock. Prevailing low prices in a number of countries militate against the general practice of insuring.

#### (C) INTERNATIONAL RE-INSURANCE OF AGRICULTURAL INSURANCES.

Whenever hail insurance companies experience disastrous seasons or live stock insurance operations are hampered by business considerations, the question of international reinsurance of these branches is seriously debated. But invariably negotiations break down when the interested parties come together to discuss technical conditions.

The difficulties involved in international settlement of claims are due to the following causes :—

(1) The marked difference in the extent to which hail insurance is adopted by the farming class in the different countries.

In certain countries it is observed that as a rule only the districts especially liable to hail seek insurance-protection. The introduction of general insurance throughout the country is difficult to effect, although it is well known that no districts are completely free from hail risk, so that even those where hail insurance is generally considered unnecessary sometimes suffer. The model pioneer activity of the Italian and German companies for the extension of hail insurance will have to be imitated by other countries if they are to stand on an equal footing as to settlement of claims internationally.

(2) The varying average yield capacity of soils. — The losses experienced in bad seasons by countries with high average unitary yields commanding good prices would entail excessive sacrifices on countries with lower average yields. On their side these latter countries will always have less interest in international settlement of claims, except in so far as they are not driven to it by want of uniformity in the insurance of their crops and by the considerations referred to under (1).

(3) Differences between principles of contracts in the various countries are so great that it is impossible to guarantee such equivalence of mutual conditions of contracts as is essential in international relations.

As a result of the course taken by the development of agriculture and its close connection with local and regional features, a great diversity in the terms of

farming agreements has been preserved, in many cases even within the same country, so that standardisation would be necessary to bring about the clearness and conciseness required for present day farming. This need for standardisation of agreements has however not yet found expression.

(4) International handling of claims should not be limited to Europe, but should also include other continents, especially America.

Efforts made to arrive at an international understanding respecting hail insurance have been so far confined to Central Europe. It was found that hail damage for certain crops occurred in all the countries concerned alike; hence in especially bad seasons it would have been impossible to arrive at satisfactory settlements, while in other years countries not as a rule so seriously affected might have to bear the additional burden of contributions for the relief of the others.

The inclusions of the countries of North and South America with their completely different climatic conditions would, taking into account the causes referred to under (1), (2) and (3), in itself bring about a change in the outlook. Up to the present no definite enquiry has been made as to this point and the International Institute of Agriculture would confer a benefit by undertaking an investigation of the kind.

In live stock insurance, international settlement of claims is of interest only in connection with short term business. Long term insurance of live stock mortality is adequately provided by national enterprise, when prices are normal and public veterinary organisation is sound. International handling of claims is most required in the case of race horses, the English market showing a remarkable absorption capacity in this respect.

For certain types of short term live stock insurance, international settlement of claims is both possible and desirable, *e. g.*, insurance for transport or for exhibition, provided that the norm conditions discussed under heading *B.* guarantee the uniformity of the principles of contract. Such insurances as those against thefts of grazing stock, insurance for the gestation period, etc., do not lend themselves in the same way to international handling, because the risks vary greatly in frequency in accordance with the personal characteristics of the owner.

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## BIBLIOGRAPHY ON ECONOMIC AND SOCIAL QUESTIONS

DIE LAGE DER LANDWIRTSCHAFT IM FREISTAAT SACHSEN. — Untersuchungen über die Rentabilität der sächsischen Landwirtschaft in den Erntejahren 1929-30, 1930-31. Bericht der mit dem Institut für landwirtschaftliche Betriebslehre der Universität Leipzig verbundenen Landesstelle zur Erforschung der landwirtschaftlichen Betriebsverhältnisse im Freistaat Sachsen, erstattet von Prof. Dr. F. FALKE unter Mitwirkung von H. ISENSEE. Heft 2. 66 Seiten mit 1 Karte. Dresden 1933, Theodor Steinkopf. Preis R. M. 3,50.

[A detailed account of the first part of the foregoing series of publications together with the Report of the Bureau for Study of farming conditions in the Free State of Saxony was given in an earlier number of this Review (1932, No. 7). This included a brief summary of the organisation and functions of the Bureau and of the substance and significance of the previous Reports, constituting essentially a statistical elaboration and utilisation of the farm accountancy results of farming in Saxony. The second Report confirms fully the view previously expressed, that with the institution and activity of the Bureau an important step forward had been taken in investigation of the agricultural situation and in the correct presentation thereof. In view of the lively interest evoked by the first Report it is easily intelligible that the Bureau for the years 1929-30 and 1930-31 was enabled to gain the support of a much larger number of farm accountancy offices than in previous years. The methods of elaborating the results are naturally the same as before, and the same detailed classification is adopted, so that a very valuable insight is gained into the development over the five year period of the many aspects of the agriculture of the Free State of Saxony].

GAMMANS L. D. Report on Co-operation in India and Europe. Singapore, Government Printing Office 1933, pp. 314.

[This collection of reports on co-operation in India and in certain countries of Europe represents the result of a six months' study tour undertaken in 1930 by the writer, the Assistant Director of Co-operative Societies in Malaya, on the instruction of his Government. As remarked in the preface, Malaya has come somewhat late into the field in co-operative organisation, and should accordingly be ready to take all advantage of the experience gained and the errors made by other countries.

The book falls into three parts. In Part I, Co-operation in India, the writer sets out the results of his enquiries into co-operative organisation, rural and urban, in five of the nine major provinces of British India, *viz.*, Madras, Bengal, the United Provinces, the Punjab and Bombay, and also in the Indian State of Hyderabad. In Part II the workings of the co-operative systems in Denmark, Holland, Germany, Czechoslovakia, Great Britain, the Irish Free State and Ulster are similarly presented. Part III consists of conclusions and recommendations for local application in Malaya, in accordance with the purposes and objects of the studytour.

The whole treatment is exceedingly clear, and the sectional arrangement followed throughout makes the book easy to consult and facilitates comparison of the working, as observed, of different types of co-operative banks and societies in the different countries under review.

For many the special interest of the book will lie in the writer's observations and discussion of the value of rural reconstruction societies and other organisations for similar ends. As he points out, the view originally held was that the credit society was the first link in the co-operative chain, and there was much to support this view in so far as the credit society is the obvious instrument for relieving the dead weight of debt which must act as a bar to progress of any kind. The lapse of time, however, has shown that cheap credit is not a wholly unmixed advantage, that the habit of continual borrowing is not necessarily eradicated by the fact of membership of a society, and that overdue loans may rise to a figure that will undermine the stability of the whole movement. "The members of credit co-operative societies have not always known how to use the credit which has been provided for them. What has been really lacking is the re-orientation of fundamental ideas... It is for this

reason that many experienced co-operators hold the view that the Better Living Society which aims at inculcating new ideas and awakening men's thoughts to new possibilities should precede or at any rate accompany the credit society". This quotation may in fact be said to be the key-note of the Report.

Better Living, or Rural Reconstruction, societies, will naturally vary in constitution in accordance with the customs, traditions and characteristics of the people among whom they are formed. As the writer observes, in Great Britain where co-operation is but little developed, the existing fully recognised need for rural betterment has been met by the formation in recent years of Rural Community Councils, elected in the villages; although these are not co-operative societies their work actually approximates closely, *mutatis mutandis*, to that undertaken by the Rural Reconstruction and Better Living societies of the United Provinces or the Punjab or by the Public Health societies of Bengal, all of which are on a co-operative basis. The scope for activities is undoubtedly wide: rural sanitation generally, including where required anti-malarial work, infant and maternity welfare, adult education both cultural and technical, provision of playing fields and village halls with encouragement of recreative activities, promotion of village industries and crafts, experimental work in horticulture and animal husbandry with encouragement of market gardening and poultry keeping, all these represent some of the directions in which progress in better living may be sought after through such organisations in all countries.

On the negative side, discouragement of unnecessary expenditure on festivals and the like is undoubtedly of benefit when not carried to unsocial lengths.

A fact that is especially noted by Mr. Gammans is that it has been found that this work of rural reconstruction or "uplift" tends to take on a more permanent character if progress is made step by step within the capabilities of the people concerned to understand what is being done, and when as much use as possible is made of the villagers' own powers of initiative and direction and of their special capacities of any kind.

Turning to the application of the enquiry to Malayan conditions it may almost be said that Malaya has suffered from being too prosperous. The immensely valuable export trade following on the rapid development of tin and rubber has brought in a revenue to the State enabling it to perform many social services that in other countries are left to private enterprise or not performed. One consequence of this has been that a natural want of enterprise on the part of the Malay population has been fostered. Since it is unlikely that the finances of the country will permit of the maintenance of this high standard of administration, it is the more desirable to use every effort for the encouragement of communal enterprise.

So far as the Malay population is concerned, development of rural co-operation has been slow. Two types of societies are actually in existence, the rural credit society providing seasonal credit almost exclusively for rice growers, and a very small number of co-operative rubber marketing societies mainly experimental in character. As regards the credit societies it is found that there is much borrowing for unproductive expenditure and a high percentage of overdue loans. No credit societies have been formed among the Malay peasant rubber growers, although roughly 45 per cent. of the rubber exported from Malaya is produced on small holdings. The reason for the absence of this form of co-operation lies in the fact that rubber yields are continuous and hence there is no need for seasonal credit, and also that, until recently, the returns have been so easily lucrative that there were no credit needs of any kind. The general introduction of co-operative marketing — probably at first under a certain guidance from small State trading factories — would undoubtedly

be of benefit to the Malay rubber growers, and the co-operative societies so formed might be used, as in other countries, as channels for the imparting of information on cultural and technical improvements.

More use might be made of the rice-growers' credit societies for this purpose of imparting agricultural information.

Co-operation for the encouragement of poultry raising among the rayats as a means of supplementing the present inadequate returns from rubber is advocated by the writer.

There is every evidence that the indebtedness of the Malay *rayat* is very heavy, and, as with most Asiatic peasantries, the debt is almost universally due to borrowing for unproductive expenditure as well as to general backward conditions. The basic solution is, in the writer's opinion as in that of many experienced co-operators, a change in habits of living and a more enlightened outlook, and it is for this reason that the importance is stressed in this Report of the Better Living Society as a necessary preliminary or accompaniment to the rural credit society. Mr. Gammans adds that the success in Malaya of the organisation of these societies among the Malay peasants will depend upon the encouragement given by the Rulers and leaders of the people. One Better Living society has already been registered, and its efforts are being watched with keen interest by the educated section of the Malay population].

C. H.

STRICKLAND C. F. (C. I. E.): Co-operation for Africa. With an Introduction by Lord Lugard. London, Oxford University Press, 1933 (pp. XIII-158).

[The object, as stated by the writer, of this small but pithy volume, is « to examine the practicability for Africans, whether in the tribal or detribalised state, of such (co-operative) institutions as have spread in recent years through Asia ».

Mr. Strickland was for 12 years, up to 1927, Registrar of Co-operative Societies in the Punjab, in that capacity also acting as Registrar of the North-West Frontier Province and of Dehli Province and as adviser for co-operation in Ajmer-Merwara, dealing in all with some 20,000 societies. From personal investigation he has a knowledge of the co-operative systems adopted by ten European countries, and since his retirement has visited — usually in an advisory capacity — Egypt, Malaya, Palestine, Zanzibar and Tanganyika. In an early chapter, entitled « What Co-operation has Done », this experience is summarised in the remark: " It is impossible for any man who has seen co-operation at work in one country after another, all completely different, but each discovering the right way of applying co-operative methods to its own needs, to believe that Africans are so different that an agency prized and utilised by the rest of the world is useless to them and cannot be adjusted to their purposes ".

The book is primarily addressed to administrators in Africa, the writer " having only a modest acquaintance with Africa at first hand " does not claim to be able to prescribe the exact ways in which co-operation may be helpful to the African. The problem has to be worked out by those who combine a real and adequate knowledge of co-operation with a knowledge of African conditions. From observation and general considerations he does however stress an all-important fact, *viz.*, that under modern conditions of communications and diffusion of ideas the " tempo " of the growth of the African mind is inevitably far more rapid than that of any change that took place in the Indian outlook during the XIXth century, or even than that of development in Japan. Hence there is the more need for long-sighted guidance.

The succeeding chapter on "African Society" treats more particularly of the society which, while no longer savage, remains wholly or partially tribal, and is at the same time advancing and acquiring new ideas and new needs. Here the question arises of the effective organisation of the resulting new activities. "The accepted policy in the British and some other territories in Africa is to guide the people forward as Africans under the leadership of their recognised chiefs and elders, rather than to dissolve their social institutions and convert the African into a pseudo-European". This is undoubtedly the sound principle, but if carried out literally it can only end in overburdening the native authorities and bringing about a standstill of the social advance. There are obviously many activities, agricultural and others, which interest only a section of the community and which should therefore be organised by voluntary groups of those interested. With proper guidance such groups will develop into self-governing co-operative societies, under the leadership, as elsewhere invariably happens, of intelligent men not possessing the status of chiefs, nor indeed always even literate, but vigorous and shrewd. Or the help of the Europeanised educated African may equally be enlisted. In this way "there should be, as African society advances, a growing number of associations for specific objects, operating in connection with the local authority, but not directly operated by it and in particular not involving that authority in the daily conduct of either economic business or social propaganda".

As regards legal control of the co-operative system, Mr. Strickland advocates for Africa, *i. e.* Africa of the Africans, the form of co-operative law under which a Registrar is appointed and assigned powers of refusing registration – for stated reasons – together with full powers of inspection and of arranging for the audit – by approved auditors – of every society, also of cancellation or liquidation of societies that may have deteriorated. This is the form existing in India, and in his opinion no other type of co-operative law, however well suited to more advanced populations, is suited to a backward population, unable to study co-operative literature and unfamiliar with co-operative principles. It is on these lines that the Co-operative Societies' Ordinance of Tanganyika (No. 7 of 1932) has been framed.

An account is given in a separate chapter of the co-operative organisation already existing in certain African areas. Excluding the co-operative societies of French North Africa in which the white French element is preponderant, co-operative organisation of one or another kind among Africans is found already existing in Egypt, West Africa, Tanganyika and in the Transkei Territories (Native Reserve) of the Union of South Africa. An interesting account is given of Egyptian co-operation which is organised mainly for credit, but as the writer says the mentality and the economic and social state of the Egyptian peasant are semi-Asiatic rather than African strictly. West Africa came early under European influence and co-operation has developed among the native growers for the preparation and sale of cacao both in the Gold Coast and in Nigeria. The Gold Coast Co-operative Societies' Ordinance was issued in 1931 for the purpose of registration and supervision of the numerous groups already existing, with the result that the cacao of the societies is at a premium. Nigeria has also important societies which are practically co-operative, but as yet no Ordinance. In the French colonies of West Africa – as also in French North Africa – compulsory native thrift societies have been for some time past organised, and in 1931 central and local credit banks were established which will make loans to these societies.

In East Africa, the mandated Territory of Tanganyika possesses a Co-operative Societies' Ordinance, framed in accordance with the advice given by the writer during his visit in 1931. The Kilimanjaro Native Coffee Growers' Association founded in 1925 has re-organised and registered under this measure. Kenya has also recently passed a

Co-operative Ordinance, but in the writer's opinion the terms are not well suited to Africans (1). In Madagascar legislation was enacted in 1930 with the object of founding a central bank and local credit societies. The Protectorate of Zanzibar has resolved on a co-operative policy, largely for the assistance of the small Swahili cultivator who is indebted, and an administrative officer has been deputed to study co-operation in certain parts of Europe and Asia.

Of great interest is the effort made by the Bantu population of the Transkei Territories in the direction of self-help and mutual help. The primary object of the native leaders was to reduce indebtedness to local—mainly European—traders. The remedy of co-operative credit was strongly urged by a Catholic missionary, the Principal of a Native Training College, and with his assistance the Native Council from 1926 onwards has promoted the formation of co-operative credit societies. By the end of 1931 there were 35 such societies with 3,300 members and deposits amounting to £10,000. The funds are derived entirely from native sources. Sale of produce and purchase of requirements are also carried out through the societies. A closer organisation is becoming essential, and a draft Ordinance has been submitted by the Native Council of the Transkei Territories to the Union Government.

Mr. Strickland again emphasises, in the chapters on Finance and Audit and on Supervision, the necessity for the appointment of specially qualified Registrars so that this important work should not fall on the already hardworked Native Councils or District Officers.

A valuable section of this co-operative "vademecum" contains draft or model rules for co-operative societies, by-laws for a co-operative Thrift and Loan Society, as Sale Society, and a Better Living Society. The final chapter takes the suggestive form of an imaginary address on the advantages of co-operation made by an organiser to a group of African villagers].

C. H.

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(2) List of abbreviations : biheb. (biweekly); bimens. (twice monthly); bimestr. (every two months); déc. (every ten days); étr. (foreign price); heb. (weekly); int. (home price); irr. (irregular); mens. (monthly); n° (number); N. S. (new series); q. (daily); sem. (half yearly); s. (series); triheb. (every three weeks); v. (volume); trim. (quarterly).

(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.

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# AGRICULTURAL STATISTICS





# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## CEREALS

### Crop prospects

In the majority of European countries June was abnormally cool and wet, especially in the south. The development of cereal crops, both of winter and of spring, already backward in consequence of the cold dry weather in April and of the cold rainy weather in May, was very slow so that at the beginning of July ripening was two or three weeks behind that of a normal year. On the whole, however, despite this delay the condition of winter cereals at the beginning of the month was in the majority of European countries as good as it was last year and in some cases even very much better. Condition of spring cereals also showed an appreciable improvement during June and did not differ greatly from the condition at the same date last year. Only in France and especially in Spain and Portugal was crop condition distinctly poorer than in 1932, due to the persistent drought in spring.

During the first half of July the weather everywhere improved though wind and rain occurred to some extent everywhere.

Laying due to storms is more frequent than usual but the damage appears to be of small importance; rust has appeared in a number of localities, without however causing such serious losses as last year, the weather having generally been cool with adequate movement of the air. Hail damage is greater than usual but, as always, is localized.

Summing up, weather in Europe has been rather favourable to crops so that the general condition in mid-July allowed a larger cereal crop to be expected than could have been expected last month.

As regards wheat the preliminary estimates of the crop are so far known for ten countries producing on the average a little less than half of the European total. These estimates indicate for 1933 higher crops than in 1932 in all countries, excepting Spain; the total appears to be 71 million bushels above that of 1932 and 70 million above the average for 1927-31.

## Cereals production.

COUNTRY	BRITISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932	Average
	Thousand centals			Thousand bushels			= 100	= 100
WHEAT								
Germany . . . . .	111,562	110,299	81,594	185,933	183,828	135,987	101.1	136.7
Bulgaria . . . . .	31,277	30,332	29,474	52,127	50,553	49,123	103.1	106.1
Spain . . . . .	84,834	110,526	84,342	141,387	184,206	140,566	76.8	100.6
Finland . . . . .	904	890	578	1,506	1,483	963	101.6	156.5
Greece . . . . .	17,148	12,158	7,011	28,580	20,263	11,685	141.0	244.6
Hungary . . . . .	49,115	38,678	48,963	81,856	64,462	81,603	127.0	100.3
Malta . . . . .	183	181	175	305	301	291	101.2	104.6
Netherlands . . . . .	8,514	8,217	3,812	14,190	13,694	6,353	103.6	223.4
Rumania . . . . .	61,730	33,322	69,373	102,881	55,536	115,620	185.2	89.0
Yugoslavia . . . . .	54,013	32,067	52,078	90,020	53,444	86,795	168.4	103.7
Totals . . . . .	419,280	376,670	377,400	698,785	627,770	628,986	111.3	111.1
Canada . . . . .	202,000	257,108	251,149	337,000	428,514	418,582	79.0	81.0
United States . . . . .	201,460	277,291	372,321	335,767	462,151	620,536	72.7	54.1
Mexico . . . . .	95,948	158,808	152,196	159,914	264,680	253,661	60.4	63.0
Totals . . . . .	7,052	5,795	7,431	11,753	9,658	12,385	121.7	94.9
Totals . . . . .	506,460	699,002	783,097	844,434	1,165,003	1,305,164	72.6	64.8
Korea . . . . .	4,983	4,983	5,194	8,304	8,305	8,657	100.0	95.9
India . . . . .	208,298	203,773	202,003	347,163	339,621	336,672	102.2	103.1
Japan . . . . .	23,597	18,802	18,114	39,328	31,336	30,189	125.5	130.3
Turkey . . . . .	48,502	41,607	48,524	80,835	69,344	80,872	116.6	100.0
Totals . . . . .	285,380	269,165	273,835	475,630	448,606	456,390	106.0	104.2
Algeria . . . . .	16,865	17,542	18,007	28,108	29,236	30,012	96.1	93.7
Egypt . . . . .	23,971	31,552	25,524	39,951	52,586	42,539	76.0	93.9
French Morocco . . . . .	15,279	16,782	15,738	25,465	27,970	26,229	91.0	97.1
Tunis . . . . .	6,173	10,472	7,015	10,288	17,453	11,692	58.9	88.0
Totals . . . . .	62,288	76,348	66,284	103,812	127,245	110,472	81.6	94.0
GRAND TOTALS . . . . .	1,273,408	1,421,185	1,500,616	2,122,662	2,368,624	2,501,012	89.7	84.9
RYE								
Germany . . . . .	181,129	184,385	166,978	323,446	329,261	298,177	98.2	108.5
Bulgaria . . . . .	5,494	5,676	5,110	9,811	10,136	9,126	96.8	107.5
Spain . . . . .	12,309	14,507	12,151	21,980	25,905	21,699	84.8	101.3
Finland . . . . .	7,469	7,261	6,719	13,338	12,966	11,998	102.9	111.2
Greece . . . . .	1,823	1,472	920	3,255	2,629	1,643	123.8	198.0
Hungary . . . . .	20,078	16,969	15,283	35,853	30,301	27,291	118.3	131.4
Netherlands . . . . .	7,108	7,650	8,756	12,692	13,661	15,636	92.9	81.2
Rumania . . . . .	7,275	5,888	7,428	12,992	10,513	13,264	123.6	97.9
Totals . . . . .	242,685	243,808	223,345	433,367	435,372	398,834	99.5	108.7
Canada . . . . .	4,000	5,005	7,917	7,000	8,938	14,138	80.0	50.0
United States . . . . .	14,188	22,319	22,608	25,336	39,855	40,371	63.6	62.8
Totals . . . . .	18,188	27,324	30,525	32,336	48,793	54,509	66.5	59.5
Turkey . . . . .	5,512	4,368	5,310	9,842	7,800	9,482	126.2	103.8
GRAND TOTALS . . . . .	266,385	275,500	259,180	475,545	491,965	462,825	96.7	102.8

COUNTRY	BRITISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand bushels				
BARLEY								
Germany . . . . .	69,927	70,872	66,774	145,685	147,652	139,115	98.7	104.7
Bulgaria . . . . .	6,678	6,769	7,065	13,912	14,102	14,720	98.7	94.5
Spain . . . . .	49,826	63,632	44,731	103,807	132,569	93,192	78.3	111.4
Finland . . . . .	3,483	3,944	3,261	7,257	8,218	6,795	88.3	106.8
Greece . . . . .	5,089	4,616	3,288	10,601	9,618	6,850	110.2	154.8
Hungary . . . . .	15,889	15,854	12,977	33,102	33,030	27,037	100.2	122.4
Malta 3) . . . . .	119	129	143	248	269	297	91.9	83.5
Netherlands . . . . .	1,105	1,301	1,935	2,301	2,710	4,027	84.9	57.1
Rumania . . . . .	37,699	32,345	41,001	78,541	67,387	85,421	116.6	91.9
Totals . . . . .	189,815	199,462	181,173	395,454	415,555	377,454	95.2	104.8
Canada . . . . .	2) 37,500	38,771	51,665	2) 78,000	80,773	107,637	97.0	72.0
United States . . . . .	81,576	143,976	130,034	169,951	299,950	270,905	56.7	62.7
Totals . . . . .	119,076	182,747	181,699	247,951	380,723	378,542	65.1	65.5
Korea . . . . .	20,979	21,161	18,124	43,708	44,086	37,759	99.1	115.8
Japan . . . . .	34,376	37,316	37,758	71,617	77,744	78,664	92.1	91.0
Turkey . . . . .	28,660	25,679	28,035	59,710	53,499	58,407	111.6	102.2
Totals . . . . .	84,015	84,156	83,917	175,035	175,329	174,830	99.8	100.1
Algeria . . . . .	14,396	14,833	17,277	29,993	30,902	35,995	97.1	83.3
Egypt . . . . .	4,434	5,792	5,340	9,237	12,067	11,126	76.5	83.0
French Morocco . . . . .	23,455	22,630	21,725	48,866	47,147	45,261	103.6	108.0
Tunis . . . . .	2,646	7,496	4,010	5,512	15,616	8,355	35.3	66.0
Totals . . . . .	44,931	50,751	48,352	93,608	105,732	100,737	88.5	92.9
GRAND TOTALS . . . . .	437,837	517,116	495,141	912,048	1,077,339	1,031,563	84.7	88.4
OATS								
Germany . . . . .	136,156	146,613	143,683	425,484	458,163	449,005	92.9	94.8
Bulgaria . . . . .	2,815	2,488	2,348	8,798	7,777	7,339	113.1	119.9
Spain . . . . .	13,372	18,309	13,588	41,787	57,215	42,461	73.0	98.4
Finland . . . . .	12,368	14,759	13,291	38,650	46,122	41,535	83.8	93.1
Greece . . . . .	3,050	2,325	1,615	9,533	7,266	5,048	131.2	188.8
Hungary . . . . .	6,720	6,962	7,021	20,999	21,756	21,940	96.5	95.7
Netherlands . . . . .	5,911	6,693	7,165	18,471	20,916	22,392	88.3	82.5
Rumania . . . . .	16,535	14,169	22,199	51,671	44,276	69,372	116.7	74.5
Totals . . . . .	196,927	212,318	210,910	615,393	663,491	659,092	92.7	93.4
Canada . . . . .	2) 122,000	133,131	130,976	2) 382,000	416,034	409,297	92.0	93.0
United States . . . . .	223,661	397,580	379,047	698,941	1,242,437	1,184,522	56.3	59.0
Totals . . . . .	345,661	530,711	510,023	1,080,941	1,658,471	1,593,819	65.0	67.6
Turkey . . . . .	3,748	2,793	2,407	11,712	8,729	7,523	134.2	155.7
Algeria . . . . .	3,153	2,786	4,138	9,852	8,707	12,932	113.1	76.2
French Morocco . . . . .	687	405	673	2,147	1,267	2,105	169.5	102.0
Tunis . . . . .	551	617	789	1,722	1,929	2,466	89.3	69.8
Totals . . . . .	8,139	6,601	8,007	25,433	20,632	25,026	115.3	78.4
GRAND TOTALS . . . . .	550,727	749,630	728,940	1,721,767	2,342,594	2,277,937	73.4	75.4

w) Winter wheat. — s) Spring wheat. — t) Unofficial data. — 2) Conjectural estimate based on area and crop condition on July 1. — 3) Including meslin.

The four Danubian exporting countries included in this group expect together a crop much larger by over 100 million bushels — than the very small crop of 1932 but still appreciably below the average. Though old crop stocks in the Danubian countries are much reduced, the exportable surplus in the coming season may be calculated, if crop forecasts are confirmed, at a minimum of 44 million bushels and may exceed this figure if the production of other cereals, and especially that of maize, is large. Excellent crops are also expected in Germany, Greece and the Netherlands.

Amongst the European countries that have not yet communicated their crop forecasts France will have a production which, though appreciably below the very good crop of last year, is considered as a good average, which means that it should not be far from 290 million bushels. In Italy a large crop is expected, the weather having latterly been wholly favourable to good ripening of the grain. In Poland, Czechoslovakia and the British Isles crop condition promises a much larger production than that of last year.

In all it may be said that if the weather continues to be favourable the European wheat crop will not only attain but surpass that of 1932, which was the largest so far recorded. As regards quality also the crop may be on the whole better than in 1932, rust and blast damage having so far been much smaller.

The European rye and barley crops appear to be about the same as those of last year, which were large, and to be rather above the average; the oat crop on the other hand, appears to be a little below both that of last year and the average.

As regards the U. S. S. R. precise information on crop prospects is lacking. It may, however, be said that weather appears this year to have been on the whole more favourable than last year, especially in the southern sections, where the most serious danger to crops is in drought and high temperatures at the beginning of summer, phenomena which have this year been absent. Though the spring wheat crop is not yet assured and the internal food situation entails prudence in the export of cereals, the good crop prospects make it probable that the quantities exported in 1933-34 will be larger than those in the season now ending.

In North America the persistence of dry and very hot weather in June has led to a heavy fall in production, which is one of the smallest so far obtained both for Canada and for the United States. On the basis of the situation on 1 July a decrease of 320 million bushels of wheat with respect to 1932 and of 460 million with respect to the 1927-31 average was expected for the two countries together. The season continued in the first half of July to be unfavourable to the spring crop, which in a number of localities had not received sufficient water to ensure development, with the result that there is reason to expect a further reduction in the estimate of the two countries.

The rye, barley and oats crops also appear very small with respect both to those of last year and to the average.

Wheat production in the majority of Asiatic producing countries is better than that of last year. The estimates for India, Japan, and Turkey indicate increases in some cases remarkable; in Syria and Lebanon and in Palestine the crop appears, on the other hand, to be small. The general information available

for China appears to indicate a production appreciably larger than the poor production of 1932.

Wheat production in North Africa is confirmed to be small both in Egypt and in the three countries of the French zone, especially in Tunis, which has recently reduced its estimate. Production of barley also appears to be rather poor in these countries as a whole, the good results obtained in Morocco not having compensated for the low yield in Egypt and especially in Tunis.

Development of crops in the southern hemisphere has been satisfactory both in Argentina and in Australia, good rains having fallen quite recently in the latter countries in the areas that suffered most from drought.

G. CAPONE.

\* \* \*

*Germany* : The cool rainy weather of the latter half of June frequently hindered crops. Heavy precipitation caused laying in some districts. Condition of winter cereals is, however, generally considered satisfactory. Flowering of rye, which occurred almost everywhere before the coming of the rains, was generally satisfactory. Flowering of wheat and winter barley was, however, somewhat prejudiced, particularly in the case of spring crops, which were somewhat backward toward the end of June.

The first estimate of the speltz crop is 3,021,000 centals against 3,414,000 last year, a decrease of 11.5 %, and 3,217,000, the average of 1927-31, a decrease of 6.1 %.

*Austria* : During the first three weeks of June, the weather was very variable and temperatures exceptionally low. The fairly frequent rains were not abundant except in the central regions and in the South of the principal Alpine Chain. In the last ten days of June rains fell over larger areas and were more abundant; in the higher mountains snow fell at the altitude of 1,300 metres.

Winter cereals looked well at the beginning of July. Flowering proceeded exceptionally slowly owing to the cold, rainy weather. The ears are well developed and the straw is generally tall.

Spring cereals also show a good development, but are very backward particularly spring wheat. Weeds have spread greatly in the oat fields.

*Belgium* : In the first half of June the weather was sunny; subsequently temperatures fell and the almost daily rains, at times with local storms, led to laying of the weaker crops.

Growth was vigorous during the month and the crops are generally of good appearance, full and promising. Some sowings of wheat remained sparse.

*Bulgaria* : The rainy, cold weather which predominated during June, was in general favourable to the growth of cereals. But the hail which fell in several areas of the country caused considerable damage to the crops. The barley harvest is in progress and is proceeding under good conditions. Cereal production this year promises to be about equal to that of last year except for wheat, which is forecast to be a little larger.

Production of mixed grain is estimated at 2,383,000 centals (4,109,000 bushels) or 113.6 % of that of last year and 95.8 % of the average of the period 1927-1931.

For speltz, owing to the considerable decrease in area, production this year is anticipated to be 199,000 centals; percentages: 61.8 % and 88.9 %.



COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	1932-33										
				1931-32 = 100	Aver. = 100	I-VII-1933			I-VI-1933			I-VII-1932		
						Thousand acres		a)	b)	c)	a)	b)	c)	a)
RYE. w) Winter crop. s) Spring crop.						a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany. . . . .	(w) 10,991	10,830	11,248	101.5	97.7	2.6	—	—	2.7	—	—	2.5	—	—
	(s) 161	166	198	96.6	81.0	2.8	—	—	2.8	—	—	2.7	—	—
*Austria. . . . .	(w) ...	901	887	...	...	2.1	—	—	2.0	—	—	2.4	—	—
	(s) ...	43	47	...	...	2.3	—	—	2.3	—	—	2.6	—	—
Belgium. . . . .	551	562	567	98.0	97.2	—	—	—	—	—	—	—	100	—
Bulgaria. . . . .	526	544	549	96.8	95.9	110	—	—	110	—	—	130	—	—
Spain. . . . .	1,458	1,516	1,588	96.2	91.8	—	—	—	—	91	—	—	—	—
*Estonia. . . . .	...	364	351	...	...	116	—	—	114	—	—	—	—	—
Finland. . . . .	563	538	533	104.6	105.8	104	—	—	—	—	—	—	—	—
France 2) . . . . .	1,740	1,763	1,866	98.7	93.2	—	—	—	—	—	—	—	—	—
Greece. . . . .	191	163	142	117.0	134.1	—	—	—	—	—	—	—	—	—
Hungary. . . . .	1,674	1,553	1,582	107.8	105.8	—	—	—	—	—	—	—	—	—
*Latvia. . . . .	(w) 652	593	—	110.0	—	—	—	—	—	—	—	—	—	—
Lithuania. . . . .	1,182	1,186	1,167	99.7	101.3	120	—	—	110	—	—	115	—	—
Luxembourg. . . . .	20	17	18	114.3	111.9	2.0	—	—	2.1	—	—	2.0	—	—
Netherlands. . . . .	406	410	476	99.2	85.4	—	—	—	—	70	—	—	—	—
Poland. . . . .	(w) 14,310	13,888	14,046	103.0	101.9	3.8	—	—	3.4	—	—	3.4	—	—
	(s) 64	63	74	100.7	86.0	3.3	—	—	—	—	2.7	3.2	—	—
Rumania. . . . .	823	861	834	95.6	98.6	d)	—	—	w)e)	—	—	—	—	—
*Sweden 5) . . . . .	(w) 533	501	—	106.2	—	—	—	—	105	—	—	—	—	—
	(s) 14	12	—	109.8	—	—	—	—	—	—	—	—	—	—
*Switzerland. . . . .	...	46	48	...	...	—	—	—	95	—	—	—	—	—
Czechoslovakia. . . . .	2,531	2,585	2,545	97.9	99.4	w)2.4	—	—	w)2.7	—	—	96	102	—
Yugoslavia. . . . .	(w) 530	511	479	103.7	110.6	x)7)e)	—	—	—	—	—	w)2.4	—	—
U. S. S. R. . . . .	63,007	64,402	64,292	97.8	98.0	—	—	—	—	—	—	—	—	—
Total Europe. . . . .	(m) 37,721	37,156	37,912	101.5	99.5	—	—	—	—	—	—	—	—	—
	(n) 100,728	101,558	102,204	99.2	98.6	—	—	—	—	—	—	—	—	—
Canada. . . . .	(w) 8) 454	9) 614	9) 704	74.0	64.5	—	—	7)74	—	—	7)94	—	—	7)93
	(s) 10) 146	160	256	91.3	57.1	—	—	—	—	—	—	—	—	96
United States. . . . .	2,716	3,271	3,254	83.0	83.5	—	—	52.9	—	—	73.7	82.2	—	—
Total America. . . . .	3,316	4,045	4,214	82.0	78.7	—	—	—	—	—	—	—	—	—
Algeria. . . . .	4	3	4	182.0	97.3	—	—	90	—	—	—	—	100	—
GRAND TOTAL. (m)	41,041	41,204	42,130	99.6	97.4	—	—	—	—	—	—	—	—	—
	(n) 104,048	105,606	106,422	98.5	97.8	—	—	—	—	—	—	—	—	—
BARLEY. w) Winter crop. s) Spring crop.														
Germany. . . . .	(w) 672	607	477	110.7	141.0	2.7	—	—	2.9	—	—	2.6	—	—
	(s) 3,240	3,268	3,328	99.1	97.3	2.6	—	—	2.6	—	—	2.5	—	—
*Austria. . . . .	(w) ...	18	21	...	...	2.3	—	—	2.2	—	—	2.6	—	—
	(s) ...	398	376	...	...	2.1	—	—	2.3	—	—	2.5	—	—
Belgium. . . . .	(w) 79	78	72	101.2	109.2	—	—	—	—	—	—	—	—	—
Bulgaria. . . . .	576	568	601	101.3	95.8	110	—	—	110	—	—	120	—	—
Spain. . . . .	4,521	4,837	4,516	93.5	100.1	—	—	—	105	—	—	—	—	—
Finland. . . . .	314	308	280	101.7	112.0	—	—	94	—	—	—	—	94	—
France 2) . . . . .	(w) 430	414	415	103.9	103.5	—	—	—	—	—	—	—	—	—
	(s) 1,383	1,445	1,351	95.7	102.4	—	—	—	—	—	—	—	—	—
*Scotland. . . . .	...	69	105	...	...	—	100	—	—	100	—	—	100	—
Greece. . . . .	550	519	481	105.9	114.2	—	—	—	—	—	—	—	—	—
Hungary. . . . .	1,203	1,160	1,100	103.7	109.4	—	—	—	—	—	—	—	—	—
*Lithuania. . . . .	...	495	487	...	...	110	—	—	110	—	—	113	—	—
Luxembourg. . . . .	8	10	9	77.5	81.3	2.1	—	—	2.1	—	—	2.4	—	—
Malta (r) . . . . .	6	6	7	92.1	84.3	—	—	—	—	—	—	—	—	—
Netherlands. . . . .	(w) 44	49	72	88.4	60.5	—	—	—	—	—	—	—	—	—
Poland. . . . .	(w) 99	99	166	99.8	59.7	3.5	—	—	3.1	—	—	3.3	—	—
	(s) 2,877	2,883	2,819	99.8	102.1	3.5	—	—	—	—	2.9	3.6	—	—
Rumania. . . . .	4,448	4,416	4,676	100.7	95.1	e)	—	—	w)e)	—	—	—	—	—
*Switzerland. . . . .	...	17	17	...	...	—	—	99	—	—	98	—	—	99
Czechoslovakia. . . . .	1,642	1,762	1,766	93.2	93.0	s) 2.7	—	—	s) 2.6	—	—	s) 2.3	—	—
Yugoslavia. . . . .	(w) 579	609	592	95.1	97.8	x)7)e)	—	—	—	—	—	—	—	—
U. S. S. R. . . . .	(w) 711	872	1,009	81.6	70.5	—	—	—	—	—	—	—	—	—
Total Europe. (m)	22,671	23,038	22,728	98.4	99.7	—	—	—	—	—	—	—	—	—
	(n) 23,382	23,910	23,737	97.8	98.5	—	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33		I-VII-1933			I-VI-1933			I-VII-1932		
				1931-32 = 100	Aver. 1932-33 = 100	a)	b)	c)	a)	b)	c)	a)	b)	c)
			Thousand acres											
Canada . . . . .	10) 3,696	3,758	4,728	98.4	78.2	—	—	84	—	—	95	—	—	93
United States . .	10,540	13,213	11,947	79.8	88.2	—	—	53.2	—	—	80.4	—	—	81.6
Total America . .	14,236	16,971	16,675	83.9	85.4	—	—	—	—	—	—	—	—	—
Japan . . . . .	1,940	2,107	2,198	92.1	88.2	—	f)	—	—	—	g)	—	f)	—
Syria and Lebanon	721	794	824	90.9	87.6	—	—	85	—	—	85	—	—	85
Total Asia . . .	2,661	2,901	3,022	91.7	88.1	—	—	—	—	—	—	—	—	—
Algeria . . . . .	3,301	3,339	3,427	98.9	96.3	—	—	90	—	—	85	—	—	80
Cyrenaica . . . .	71	49	88	146.0	80.6	—	—	—	—	—	—	—	—	—
Egypt . . . . .	292	366	359	79.9	81.5	102	—	—	104	—	—	108	—	—
French Morocco .	3,446	3,298	3,008	104.5	114.5	—	—	—	—	—	—	—	—	—
Tunis . . . . .	865	1,507	1,197	57.4	72.2	—	—	70	—	—	75	—	—	—
Total Africa . . .	7,975	8,559	8,079	93.2	98.7	—	—	—	—	—	—	—	—	—
GRAND TOTAL. (m)	47,543	51,469	50,504	92.4	94.1	—	—	—	—	—	—	—	—	—
(n)	48,254	52,341	51,513	92.2	93.7	—	—	—	—	—	—	—	—	—
OATS.														
w) Winter crop														
s) Spring crop														
Germany . . . . .	7,853	8,117	8,583	96.8	91.5	2.7	—	—	2.8	—	—	2.7	—	—
*Austria . . . . .	—	784	759	—	—	2.4	—	—	2.4	—	—	2.5	—	—
Bulgaria . . . . .	306	281	330	108.9	92.9	120	—	—	120	—	—	130	—	—
Spain . . . . .	1,599	1,926	1,926	83.0	83.0	—	—	—	—	—	99	—	—	—
Finland . . . . .	1,110	1,124	1,106	98.7	100.4	—	—	92	—	—	—	—	—	99
France 2) . . . .	2,180	2,123	2,036	102.7	107.1	—	—	—	—	—	—	—	—	—
(w) s	6,203	6,295	6,540	98.6	94.9	—	—	—	—	—	—	—	—	—
*Scotland . . . .	—	867	872	—	—	—	100	—	105	—	—	105	—	—
Greece . . . . .	324	304	293	106.8	110.8	—	—	—	—	—	—	—	—	—
Hungary . . . . .	572	578	649	99.0	88.2	—	—	—	—	—	—	—	—	—
*Lithuania . . . .	—	931	820	—	—	106	—	—	110	—	—	110	—	—
Luxemburg . . . .	69	74	72	93.3	95.0	2.1	—	—	2.3	—	—	2.6	—	—
Netherlands . . .	337	350	376	96.3	89.8	—	—	—	—	—	68	—	—	—
Poland . . . . .	5,487	5,487	5,224	99.9	104.9	3.3	—	—	—	—	2.8	3.4	—	—
Rumania . . . . .	1,853	1,956	2,655	94.7	69.8	d)	—	—	—	—	—	—	—	—
*Switzerland . . .	—	41	49	—	—	—	—	97	—	—	98	—	—	99
Czechoslovakia . .	2,011	2,027	2,078	99.2	96.7	2.8	—	—	2.9	—	—	2.3	—	—
*Yugoslavia . . w)	73	87	—	83.2	—	7) e)	—	—	—	—	—	—	—	—
Total Europe . . .	29,857	30,642	31,868	97.6	93.8	—	—	—	—	—	—	—	—	—
Canada . . . . .	10) 13,250	13,148	12,997	100.8	101.9	—	—	84	—	—	95	—	—	95
United States . .	37,023	41,224	39,590	89.8	93.5	—	—	49.3	—	—	78.7	—	—	78.1
Total America . .	50,273	54,372	52,587	92.5	95.6	—	—	—	—	—	—	—	—	—
Syria and Lebanon	28	28	35	101.8	80.6	—	100	—	—	100	—	105	—	—
Algeria . . . . .	524	488	592	107.4	88.5	—	—	90	—	—	85	—	—	80
French Morocco .	74	56	83	132.4	89.5	—	—	—	—	—	—	—	—	—
Tunis . . . . .	74	54	104	136.4	71.0	—	—	80	—	100	—	—	—	—
Total Africa . . .	672	598	779	112.4	86.1	—	—	—	—	—	—	—	—	—
GRAND TOTAL . . .	80,870	85,640	85,269	94.4	94.8	—	—	—	—	—	—	—	—	—

\*) Countries not included in the totals. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U. S. S. R. — n) Including U. S. S. R. — †) See explanation according to the various systems, page 431. — 1) About the middle of the previous month. — 2) Sowings to 1 May — 3) The figures for 1932-33 and 1931-32 have been calculated taking into account the results of the new agricultural survey. — 4) Average 1928-29 to 1930-31. — 5) Provinces of Svealand and Götaland. — 6) Including spelt and meslin. — 7) Winter and spring crops. — 8) Area expected to be harvested. — 9) Area harvested — 10) Area to be planted according to farmers' intentions. — 11) Barley and meslin.



*Estonia* : The effects of the drought were felt immediately after the sowing and also in part at the beginning of July. They were particularly severe in the northern regions where the condition of spring crops is below the average, whereas the situation of spring crops in the southern regions is a little better, thanks to the good soil.

*Irish Free State* : The weather during the month of June was variable but on the whole favourable to growth. No serious damage was caused by storms, pests or diseases.

*Finland* : During June dry weather predominated.

The area sown to meslin is 34,600 acres against 33,800 in 1932 and 26,800 in 1927-31, an increase of 2.5 % and 29.2 % respectively. Crop condition on 1 July was 94 against 97 on the same date last year.

*France* : The month of June was marked by storm showers which were often frequent and violent in most regions. The damage was, however, restricted in extent; laying, many cases of which were reported in the Southwest and West was on the whole fairly localised but rains have restricted and delayed ripening of the grain; in the North rainfall hindered and restricted earing and grain formation; in the centre and in the Paris Basin, rains were rather favourable to cereal crops, especially oats. In all of these regions, fine weather returned at the beginning of July with the result that the damage may apparently be easily repaired.

In the South-east, rainfall at the end of June was favourable to late wheat, favouring its ripening, which had been compromised by the previous drought; threshing has not revealed much blasting but yields are much larger than those of last year, when they were very mediocre in this region, and appeared on the whole to be good.

Harvesting has been nearly completed in the South-west where threshing has already begun.

The wheat crop promises to be good in the principal producing regions, although in the North it is feared that yields do not correspond to the present appearance of the crop.

On the whole, it appears to be a very good average, although considerably below that of last year; it should, however, be sufficient to meet requirements for consumption, especially if account is taken of the large stocks left from last year's production. The Government has passed a law fixing the minimum price of 115 francs per quintal of wheat produced.

Crop prospects for secondary cereals, especially oats, seem to be better than those of last month following the rains; yields should be deficient in the West and Southwest, whereas they appear to be good in the other regions.

*Great Britain and Northern Ireland* : In England and Wales the warm dry weather at the end of May continued in the first fortnight of June with local thunder showers subsequently. More rain was generally needed at the end of June. With the exception of some late spring sowings which were rather thin and patchy on the lighter soils, all cereal crops were generally promising. Weeds on the whole were less troublesome than usual in most areas.

Wheat was generally a strong healthy crop although inclined to be short in the straw in some districts. Except on some less suitable land it is expected that yield will be over average. Barley improved and yields were expected to be about average. Autumn sown oats were generally promising though rather short in the straw. Slightly below average yields of spring oats were anticipated.

In Scotland the weather during July was exceptionally dry and bright. Growth was satisfactory generally but towards the end of the month cereal crops lost colour and suffered slightly from a lack of moisture. Practically no damage was caused by disease or insect pests.

In Northern Ireland the weather during June was ideal for the growth of crops. The wheat crop made remarkable growth during June and in most cases is looking extremely well. Oats improved except on light sandy soils.

*Greece* : Despite the generally unsettled weather of June condition of cereals has remained good. The damage caused by laying in certain districts is not considered very serious. The cereal crop and especially that of wheat, is consequently expected to be exceptionally good this year.

*Hungary* : In the two weeks from 21 June to 5 July the weather was characterized by temperatures generally below normal and in the greater part of the country by frequent storm rains bringing moisture considerably above the average.

Hail has not caused any great damage save in isolated instances.

Wheat has tillered well and the straw is quite high. In many places laying has occurred. Ears are well developed and sound. Due to the cold weather ripening was slow. On 5 July harvesting had not yet been begun. Owing to laying, rust has appeared in several departments but damage is not large.

Rye has generally tillered well and the straw is high. In many places laying is also reported. The ears are well developed and long. Ripening is backward. At the end of the period under consideration harvesting had been begun, principally on sandy lands.

Harvesting of winter barley is in progress but has been hindered by rains. Spring barley and oats are developing well but are still green and in many places infested by weeds.

*Italy* : During June the temperature rose continually ; fairly good and sometimes even abundant rains fell in northern and central Italy, while scarce or negligible precipitation was received in southern Italy. The wheat situation remained good until the end of the month despite some partial, slight attacks of rust. Harvesting of late varieties, which began in some regions of southern and insular Italy during the first half of June continued regularly during the latter half of May. In many provinces threshing had begun. The winter cereal harvest of which data are not yet available, is satisfactory. In some provinces attacks of locusts were reported.

*Latvia* : According to the reports of agricultural correspondents, the crop condition of winter wheat was average in 38.7 % of the cases, above in 56.1 % and below in 5.2 %. The corresponding figures for winter rye are 32.6 %, 63.7 % and 3.7 %, those of spring cereals: 48.3 %, 10.2 % and 41.5 %.

*Lithuania* : Though June was rather cold and very rainy the weather was fairly favourable to growth.

Condition of meslin on 1 July was 110 (3.3 according to the system of the country) against 113 (3.4) in the corresponding date last year.

*Luxembourg* : The rains of June improved crop condition, which at the beginning of July was generally good and promised good yields.

Crop condition of meslin on 1 July was according to the system of the country, 19 against 20 on 1 June.

*Poland* : In comparison with the estimate of June 5, the crop condition of winter and spring cereals on June 15 has considerably improved due to the warm weather during the first ten days of June and to the abundant rainfall.

Soil moisture has been sufficient in 57 % of the correspondents' reports; 52 % of the correspondents' replies note that the heat and sunshine have been insufficient and 48 % report satisfactory conditions.

Towards the middle of June, heavy rains laid rye crops in places and created unfavourable conditions for the flowering of wheat.

During the period June 10-June 20 hail caused considerable damage in the departments of Volhynia, Tarnopol, Kilce and Posnania. In the southern part of the country rust has appeared in the winter wheat fields.

During the last 20 days (15 June-5 July) crop condition of all wheat has considerably improved. This improvement is due to the large amount of rainfall. Of correspondents' replies, 65 % report adequate moisture in the fields and 32 % excessive moisture. According to 60 % of correspondents' replies warmth is adequate.

In several districts, heavy rains, storms and hail have caused some damage in the fields. Most information on damage has been received from the departments of Polesia, Volhynia, Stanislawov and Tarnopol.

*Portugal* : Harvesting this year has been a fortnight earlier. Cereals suffered at first from excessive humidity at the beginning of the winter and from the prolonged drought later. Production of wheat is consequently expected to be 50 % below that of last year and that of rye, barley and oats 40 % inferior.

*Rumania* : Toward the middle of June winter cereals promised a normal crop, despite the rather unsatisfactory conditions in which they developed. Brown rust and yellow rust have been reported. The losses caused thereby are not large. Black rust, which destroyed a large part of the crop last year, has not been reported. Spring cereals, which at the beginning of June were rather unsatisfactory, had greatly improved in condition by the middle of that month. Condition continued to improve in the latter half of June. Hail has not caused any serious damage in three departments. Towards the end of the first decade of July harvesting of wheat and barley had begun in the South though with an appreciable delay. The first shipments of wheat arriving in the internal market are of good quality.

*Switzerland* : June was a rainy month, marked from time to time by falls in temperature and even by falls of snow in elevated regions. Under the influence of persistent rainfall and predominantly cool weather, part of the crops could not develop in the desired manner, as the weather conditions in part checked growth.

As regards winter cereals, a nearly normal crop is counted upon, which has been damaged only by fairly frequent laying caused by violent rains. The flowering of winter rye has been checked by adverse weather and, in consequence lower yields of grain should be expected in different places. The wheat crop is growing well and should result in an average crop.

The growth of spring cereals has been somewhat compromised by excessive moisture and by falls in temperature. In certain regions weeds spread rapidly, partly because the measures taken to destroy them did not meet with full success owing to the persistence of rainfall.

*Czechoslovakia* : In June the weather was very variable. At the beginning of the month it was cold and night temperatures were relatively low. There was abundant precipitation in the latter half of the month.

The weather differed in different parts of the country and in some there were rains and storms after the heat. Toward the end of the month temperatures fell again and there were abundant rains in Bohemia and in the eastern districts.

Growth remained backward but the rains were favourable. Cereals did not develop uniformly. Rye has generally long, well-developed ears but in some areas, owing to the rains, regular flowering did not occur. Wheat, which was still in flower in lowlying areas and in ear in the higher areas, promised very good yields.

Barley also promised a good crop, while oats was in some districts in less satisfactory condition.

Owing to the backwardness of growth harvesting this year will be rather later than usual. If weather remains favourable a good crop may be counted on.

*Yugoslavia* : The changeable, rather cold and damp weather during June was, in general, favourable to the growth of cereals. Wheat has eared well and flowered normally ; formation of barley and oat grains and also of wheat grains in the southern regions was good. The grains, in fact, are of good quality and high weight.

The persistence of rainy weather, wind and hail have caused laying and rotting of wheat in some districts, especially in Banat and Srem. The approach of the ripening period urgently requires dry weather and warmth, which might improve the situation of crops suffering from excessive moisture.

In any case, thanks to some dry warm days towards the end of the month, the crop condition of all cereals on July 1 was considered to be good.

*U. S. S. R.* : The data published by the Commissariat for Agriculture during the present season concerning the areas sown to all spring crops, compared with the areas sown in the preceding three years and those fixed in the plan are as follows :

	<i>Area sown.</i> (ooo acres)			
	1933	1932	1931	1930
Total area forecast in the plan . . . . .	234,754	253,040	235,495	229,811
Total area actually sown . . . . .	230,081	238,460	239,449	214,491

Of the total area sown the *kolkhozi* had sown 168,454 acres or 102.0 % of that planned, the *sovkhozi* 27,217,000 or 109.6 % of the plan and the individualistic farms 34,410,000 acres (76.7 % of the plan). Compared with the planned areas, the areas sown represent 98.0 % in the current year, 92.3 % in 1932, 101.7 % in 1931 and 93.3 % in 1930. The difference between the area of the plan and that actually sown is 4,695,000 acres. The percentages of the areas sown in the current season compared with those of the plan for the most important cereal producing regions of the Union are as follows :

	Thousand acres	% of the plan
Middle Volga region . . . . .	17,503	100.0
Central Black Earth region . . . . .	17,139	96.1
Lower Volga region . . . . .	15,331	97.7
North Caucasus . . . . .	19,858	97.4
Crimea . . . . .	1,164	101.2
Kazakstan . . . . .	11,496	94.2
Kirghizia . . . . .	2,236	95.2
Western Siberia . . . . .	18,180	109.3
Eastern Siberia . . . . .	4,065	86.6
Ukraine . . . . .	40,467	95.6
White Russia . . . . .	6,679	100.9

The figures of area sown in 1933 being now available for all the spring crops they may be added to those of the area sown in autumn 1932 (92.9 million acres) arriving at a total sown area for 1932-33 of 323 million acres against 338 million fixed in the plan, 95.4 %. The total area destined to all the crops was 337 million acres in 1932 and 1931, 302 million in 1930, 292 million in 1929 and 279 million in 1928.

Assuming that the 1933 plan for spring sowings of the principal cereals will be completely carried out (though in reality it is probable that the figure of the plan has not been attained and that of the area of 4,695,000 acres above indicated a certain part must be divided equally between the principal spring cereals) and adding to these areas those sown in autumn 1932, which are already known, the total area in the current season compared with that of preceding years, should be as follows :

*Area sown.*

(ooo acres)

Year	Total wheat	Spring wheat	Rye	Barley	Oats	Maize
1932-33 . . . . .	85,389	57,329	64,248	18,286	40,279	8,901
1931-32 . . . . .	88,724	56,388	65,484	17,206	38,529	9,084
1930-31 . . . . .	92,070	62,897	68,380	16,853	42,495	9,741
1929-30 . . . . .	80,493	57,124	69,149	17,792	42,429	8,686
1928-29 . . . . .	73,461	57,263	61,614	19,979	46,657	8,755
1927-28 . . . . .	68,526	53,257	61,644	18,032	42,616	11,105

During June and the first ten days of July the weather conditions were in general favourable. On 10 July hoeing of cereals other than maize was effected on an area of 80,128,000 acres.

Harvesting conditions differ greatly this year. In the first place, the system of cereal supply has been radically changed. In fact, instead of the so-called " contract " system, according to which the *kolkhozi* and the individual growers agree, in exchange for assistance from the Government in the form of seed, machines, fertilizers and other material, to supply it with fixed quantities of cereals, there have this year been established rigid regulations according to which the *kolkhozi* and the individualistic farms must supply the Government with quantities of cereals fixed in proportion to the areas planned to be sown. In addition the delivery of cereals to the Government must be carried out in the first place, that is, immediately after the harvest and before the distribution of the crop amongst the members of the *kolkhozi*. It must, however, be noted that in the current year there were fixed for the first three months of the crop (July, August and September) quantities much greater than in preceding years with a view to terminating the supply campaign as early as possible.

The Government has recently taken a series of measures to carry out the harvest as thoroughly and rapidly as possible ; it has promulgated strict orders to the directors of the *soukhhozi* and of the *kolkhozi* to put a stop to the theft of cereals from the fields, obliging them to organize rigorous supervision over the yields by day and night. At the beginning of July the Commissariat for Agriculture consequently decreed that if the fields on which harvesting is being carried out are more than 1.5 kilometres distant from the settlements the members of the *kolkhozi* to whom the harvesting is entrusted must sleep in the fields and for this purpose construct sheds, tents and so on. As it attributes great importance to exact determinations

of the crop the Government has this year established a special central commission, which, by means of local organs, will check the information supplied by the *soukhhozi*, the *kolkhozi* and individual growers concerning the condition of the crops. There have already been recorded numerous cases of divergence between the estimates made by the representatives of this special commission and those made by the directors of the *kolkhozi* and *soukhhozi*. Forecasts of this year's crop, on the basis of information not yet complete and not always checked by the above-mentioned commission, were as follows at the end of June.

These estimates are more favourable than those at the same date last year and much more favourable than those of autumn 1932, which were much below the estimates of the end of June. They give grounds for expecting this year a crop above the average and in some areas even more than satisfactory.

In the southern regions of the Union harvesting had already been begun toward the end of June and it has subsequently been extended to neighbouring regions.

By a decree of 13 July the Council of Peoples Commissaries, given the favourable crop prospects (above average) in the southern sections of the Union, ordained an increase with respect to those fixed on 1 March of the quantities of cereals to be delivered to the Government by the *soukhhozi* in these sections. The total increase has been fixed at 8,664,000 centals (433,200 short tons), 38 % of the quantity fixed on 1 March, which was 22,928,000 centals (1,146,000 short tons). In the various sections of the Union the percentage increases are as follows: Ukraina 50 %, Crimea 32 %, Northern Caucasus 29 %, Lower Volga 25 %, Transcaucasia 18 % and Central Asia 9 %. Of the total of 31,592,000 centals (1,580,000 short tons) as now fixed the *soukhhozi* of Ukraina must supply 14,617,000 (731,000) and those of Northern Caucasus 11,222,000 (561,000), together over four-fifths.

*Argentina* (Telegram of 20 July): Since the middle of June the weather has been generally favourable to the development of wheat sowings, the condition of which has ameliorated. Temperatures were much lower, with benefit to the crops, the weather having previously been too hot. In some areas frosts and excessive rains occurred. On the whole the plants appear sound and vigorous.

The weather has, on the other hand, not been favourable to barley and oats, these crops having suffered serious losses from the excessive cold and frosts. Partial resowing seems necessary and good rains will therefore be required. No locust damage has been reported.

*Canada*: During the week ended on June 28 drought had a damaging effect on crop growth across the southern part of Canada from Eastern Quebec to the Rockies. Good rains fell in the northern and central districts of the Prairie Provinces, where crop condition was maintained or improved, but further general precipitation was necessary. Grain producers in the Prairie Provinces are encountering many trials this season, particularly from drought, heat, hail, insects and disease. Grasshoppers are becoming migratory and seriously threaten the crop over large areas in the south of the three provinces. In Saskatchewan root rot accentuated damage from drought.

In all districts of Quebec except the north western counties, the growth of all crops was retarded as a result of drought and rain was urgently needed. In Ontario, particularly latesown crops were adversely affected. Heavy rainfall greatly improved conditions in the Maritime Provinces. In British Columbia reports are much more optimistic as a result of clear warm weather during the past fortnight.

According to later news cabled by the Canadian Government on July 5. The wheat crop entered the critical month of July with less than average prospects. The

most serious drought and insect damage has occurred in the specialised wheat areas of the central and southern parts of the Prairie Provinces. June rainfall was much below the normal at most points. Only scattered showers fell during the week and temperatures were fairly high.

According to a telegram of 12 July in the Prairie Provinces, crop prospects have been barely maintained. Important grain growing areas received good rains which, however, fell too late to ensure an average crop. Some districts in Saskatchewan and Alberta will harvest less than half the normal crop. Rains fell in northern areas of all three Provinces during the week and prospects there were quite good although generally lower than in 1932. The crop situation shows some improvement in the Maritimes, eastern Canada and British Columbia. Almost average yields are promised in the Maritimes. The serious drought which has been prevalent in most of Quebec and Ontario for two to three weeks has been broken by rains and showers. Full recovery is however, not possible and spring grains will yield less than usual. British Columbia reports a decided improvement during the past two weeks due to plentiful moisture and hot weather.

According to a telegram of 20 July in the Prairie Provinces no material change occurred rains having been extremely light. That part of the crop which is maturing early is thin and short. In Manitoba crops are poor in the South and fair to good in the North. In Saskatchewan they are also poor in the Southwest and west central area and part of the south central area, while in other areas they are fair to good. In Northern Alberta conditions are favourable and the outlook is promising.

*United States* : In the first week of July harvesting was in progress in the Northern Great Plains where the wheat crop had ripened prematurely due to the dry weather. Some slight rainfall benefited crops in the spring wheat area where deterioration had not advanced too far but crops in the East were very poor on light soils. North Dakota crops continued to deteriorate and some were cut for hay. Harvesting of oats had been practically completed in the Southwest. The Ohio valley crop is poor.

By July 13 harvesting of winter wheat had been almost finished to the Ohio valley, Iowa and Nebraska. Rainfall was unsatisfactory and crop condition poor.

Some rain fell in South Dakota and improvement was noted locally in North Dakota.

*Palestine* : Although the weather during May was cool, on the whole a number of days with hot dry winds did considerable damage to the crops which maintained their condition under adverse conditions. The rainfall for the year (June 1 to May 31st) shows figures much below the average throughout the country and in many cases is the lowest ever recorded. Additional damage was caused to cereals, more especially wheat, by a fairly widespread attack of *rust* (*Puccinia graminis*). Rust epidemics are comparatively rare in Palestine and depend to a large extent on climatic conditions favorable to the development of the fungus. Harvest is over and yields in general are apparently from 60 to 70 % of normal. This does not apply to the drought stricken areas where yields vary from a complete failure to 25 or 30 % of normal.

*Algeria* : The rainfall which fell in the last few days of May persisted in the first half of June was very beneficial to late cereals, which ripened in the best of conditions. The crop situation has therefore on the whole improved.

Grain formation was less good after the rains.

The harvest, which was greatly restricted and delayed by adverse weather was actively continued in the latter half of June ; threshing is in progress.

The production estimate made at the end of May remained unchanged as a preliminary approximate estimate. Threshing yields at present reported are very variable and often mediocre, especially in the West of the Colony in Oran; in the department of Constantine they should be relatively satisfactory, whereas they are extremely variable from one region to another in the department of Algiers. It should be noted that the department of Constantine alone produces twice as much hard wheat as the other two departments together whereas the production of soft wheat is centred in the department of Algiers, which produces twice as much as the departments of Oran and Constantine together; production is, moreover, practically exclusively carried out by Europeans.

If account is taken of the preliminary estimate at the end of May it is in fact, found that the production of soft wheat will be good, if not very good, the area having been increased by 7 % and yields being about equal to those of last year; it is forecast to be 5,313,000 centals (8,855,000 bushels), whereas last year 5,018,000 (8,363,000) was produced and the average production for the previous five-year period was only 4,179,700 (7,866,000); it has been exceeded only by the productions of 1923 and 1930, each of which reached 5,732,000 (9,553,000).

Production of hard wheat on the contrary, two thirds of which is cultivated by the natives, estimated at 11,552,000 (19,253,000) is smaller than the not very abundant production of last year, 12,525,000 (20,874,000) and much below the average of 1927-31 (13,406,000; 22,343,000), despite the extension of sowings; apart from the crop of 1926, which was about equal, it exceeds, in the post-war period, only the productions of the very poor crop years 1920-1922 and 1924, in which the wheat crop occupied about 500,000, 750,000 and 250,000 acres less; the yield of hard wheat this year will hardly reach 3.8 centals (6.4 bushels) per acre, whereas the average yield of the quinquennium 1927-1931 is 4.5 (7.4).

The barley and oat crops are still smaller although the yield per acre of the former cereal about equals and of the latter exceeds the very poor one of last year.

If the forecasts are realised this will be the third deficit year for cereals since the very good years 1928 and 1930.

*Egypt:* The wheat harvest terminated in June and threshing, winnowing and storing was carried on. Yields are 6 % above average.

*French Morocco:* June was in general a dry month despite some local heavy showers. These conditions favoured harvesting, which, in the case of barley, oats and soft wheat, was nearly finished at the end of June and was about to begin for hard wheat.

Threshing, which began in June gave smaller yields than had been expected in eastern Morocco, where some wheat varieties have been damaged by sirocco and injured by rust; the selected varieties have, on the contrary, given very good yields. In the Taza region, yields, although diminished by the drought, are not deficient. In the Fez area, specific weight is higher than was expected. In the Gharb region, parasites have caused important losses.

The soft wheat crop is continually increasing; while the soft wheat area is in fact, about equal to the five year average of 1927-1931, that of soft wheat is 60 % above the average; it has increased from 667,000 acres in 1932 to 875,000 this year, increasing therefore by 31 %. Production of soft wheat was, at the end of June, estimated at 5,540,000 centals (9,234,000 bushels), showing a slight increase of 0.3 % on that of last year, and an increase of 64 % on the average (3,373,000 centals; 5,622,000 bushels).



This result is evidently due in particular to the increase in area but it should be noted that although yield is much below that of last year, it is slightly above the average yield of the period 1927-1931.

*Tunis* : Conditions in June continued to be rather unfavourable for cereals, which had already been affected by frosts and drought and to a great extent by cecidomya. Crop condition deteriorated further. The June estimate, on the basis of the first harvest returns, shows a decrease in the production expected.

Yields of wheat are distinctly bad owing to the damage caused by cecidomya. Hard wheat has yielded 2.6 centals (4.3 bushels) per acre which is comparable with the yield of 1930 and with the exception of that year, the lowest since 1924; the averages of the quinquennia 1922-26 and 1927-31 were respectively 3.2 (5.4) and 3.4 (5.7). The area cultivated remains, despite a decrease on those of the last three years, above the quinquennial average 1927-31, the production deficit being finally estimated at only one-fifth with respect to the 1927-31 average and only one-tenth with respect to the 1922-1931 average ; this year's crop is estimated at 4 million centals (7 million bushels) Yields of soft wheat are still worse, with 6.0 centals (10.0 bushels) per acre against the average of 7.1 centals (11.9 bushels) in 1922-26 and 9.1 (15.2) in 1927-31. As, however, the area cultivated has considerably increased, having trebled since 1922, the quantity produced remains at 1,800,000 centals (2,900,000 bushels) greater than in any year previous to 1932 and exceeds the decennial mean of 1922-31 by one-third and the quinquennial mean 1927-31 by 13 %.

Total production of wheat should thus, despite the very low yields, be practically equivalent to the average of 1922-31 and possibly even exceed it slightly.

Yields of barley and oats, though very much below those of last year, are little below the average ; barley should on the whole give 3.0 centals (6.3 bushels) per acre against the 1927-31 average of 3.3 (6.9); oats 7.4 (23.1) against 7.6 (23.7) in 1927-31 and 5.8 (18.1) in 1922-26. The decrease in production of these cereals is thus due essentially to the diminution in areas cultivated.

*Australia* (Telegram of 17 July) : Owing to scantiness of precipitation the season opened unfavourably but subsequent rains have somewhat improved the situation. The appearance of the wheat crop is favourable in Western Australia and Victoria but in New South Wales, where germination has been irregular, it is unfavourable. In South Australia the wheat remains generally unfavourable, rain, which is still lacking, being required to improve the position.

## MAIZE

Information on the maize crop, received at the Institute up to the publication of this Crop Report is too fragmentary to give a clear idea of the extent of this crop in the northern hemisphere during the current season. The first indications of the extent of the area to be sown to maize, however, show either some reduction or little change compared with 1932, and with the five-year average 1927-31. Taking into consideration the various difficulties encountered in the world maize trade, and the discouraging level of prices during the preceding season, there is reason to believe that the more complete data which will be available later, will confirm the forecast of a check to the slow tendency to increase of the areas destined to maize in the northern hemisphere during

the last ten years. The tendency noted in recent years in some large maize importing countries (Denmark and the Netherlands) to reduce the numbers of livestock, owing to the difficulties met with in marketing livestock products, will not fail to have its effect on the growth of maize production in the exporting countries. For technical-cultural reasons (crop rotation) and also because the maize producing and exporting countries in the northern hemisphere are all also large maize consumers, no very large reductions in area should be anticipated, even if prices remain very low both considered separately or in relation to other fodder products.

### Maize.

COUNTRIES	AREA					CROP CONDITION (†)								
	1933	1932	Average 1927 to 1931	% 1933										
				1932 = 100	Aver. = 100	I-VI-1933			I-VI-1933			I-VII-1932		
						1,000 acres								
					a)	b)	c)	a)	b)	c)	a)	b)	c)	
Austria . . . . .	...	148	145	...	...	—	—	3.4	2.8	—	—	2.6	—	—
Bulgaria . . . . .	1,705	1,829	1,726	93.2	98.8	140	—	—	140	—	—	140	—	—
France 1) . . . . .	813	782	806	103.9	100.8	68	—	—	—	—	—	66	—	—
Hungary . . . . .	...	2,905	2,670	...	...	—	f)	—	—	—	—	—	—	—
Italy 2) . . . . .	3,181	3,259	3,489	97.6	91.2	—	—	—	—	—	—	—	—	—
Rumania . . . . .	11,120	11,575	—	96.1	—	—	f)	—	—	—	—	e)	—	—
Czechoslovakia . . . . .	338	338	349	101.6	96.8	—	—	—	—	—	—	—	—	—
Yugoslavia. . . . .	...	6,488	5,893	...	...	—	3) f)	—	—	—	—	—	—	—
—														
Canada . . . . .	134	130	143	103.1	93.6	—	—	89	—	—	—	—	—	90
United States . . . . .	103,022	107,729	100,519	95.6	102.5	—	—	—	—	—	—	84.9	—	—
—														
Algeria . . . . .	19	20	24	91.1	78.4	—	—	90	—	—	—	—	100	—

(†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 431.  
 1) Areas sown to and crop conditions on 1 June. — 2) Main crop ("maggengo"). — 3) Middle of the previous month.

Examining the situation in the different countries, it is observed that the largest maize producer in the world, the United States, has considerably reduced (by 4.4 %), its maize area compared with 1932, although this area still remains 2.5 % above the average of 1927-1931. To appreciate the true value of this year's figure of area, account must be taken of the fact that during the preceding four years, namely 1929-1932, the area sown to maize in the United States showed a continual increase: 97.8 million acres in 1929, 100.8 million in 1930, 105.3 million in 1931 and 107.7 million in 1932, with a decrease to 103.0 million this year.

As regards the second great maize-producing country of the northern hemisphere, Rumania, it must be noted that the data on area given in the table represent only a preliminary estimate of the area sown this year compared with the corresponding data, equally provisional and obtained by the same method last year. The final figure for area cultivated to maize last year is 11.9 million acres. At the present time it is not possible to forecast the eventual total area sown to maize in Rumania.

Amongst the other large European producers Italy and Bulgaria have slightly reduced their area with respect to both 1932 and the 1927-31 average.

For the European situation a more precise indication will be available when the areas sown in Yugoslavia and Hungary and the final estimate for Rumania are known.

*Production of Maize.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand bushels				
Bulgaria . . . . .	21,746	23,246	16,098	38,833	41,511	28,747	93.5	135.1
United States . .	1,120,215	1,628,505	1,406,123	2,000,384	2,908,045	2,510,933	68.8	79.7
Turkey . . . . .	9,921	8,267	9,227	17,716	14,762	16,477	120.0	107.5

As regards the Soviet Union it is known only that the area planned for this year (8,901,000 acres) is slightly below that actually sown in 1932 (9,084,000 acres). In Ukraina and Northern Caucasia, which are the principal producing regions, weather up to mid-June had been favourable.

As regards the development of the crops it may be said that in the United States weather has not in general been favourable to maize. This may be seen from a comparison of the unit-yields forecast for this year with those for last year. In fact, while this year's area shows a reduction of 4.4 % with respect to that of last year and an increase of 2.5 % with respect to the 1927-31 average, the crop forecast is 31.2 % below that of last year and 20.3 % below the average.

In the Danube lands the weather at the beginning of the season was distinctly unfavourable. The excessively cold and rather rainy spring hindered sowings. In some regions in which these had been proceeded with during the cool weather germination was defective and the land had to be recultivated and resown. The warmer weather in the latter half of June considerably improved crop condition in the Danube area.

At mid-July crop condition in Italy and France promised good yields.

The first estimates of the quantities harvested are at present available only for three countries, the United States, Bulgaria and Turkey, for all of which the data are given in the above table.

V. DE

*Austria*: At the beginning of July, the maize crop was very backward due to the lack of warmth. The stalks are short and often yellow. In some places it has not been possible even to begin the first cleaning.

*Bulgaria* : In the last week of June, which was rather rainy, crop condition improved thanks to the favourable weather. The crop seems abundant and almost equal to that of last year.

*France* : The storm rains of June in all regions were favourable.

*Hungary* : Due to the generally cold weather development was backward.

By 5 July, however, crop condition had greatly improved, thanks to a few warm days. The second digging was in progress. For the whole country crop condition was considered good.

*Portugal* : Only a small production is expected on the drier and unirrigated lands due to the drought, but the crop on moister lands has a good appearance. Sowings of late varieties have encountered difficulties owing to the hardness of the soil.

*Rumania* : Toward the middle of June crop condition had greatly improved. In places, due to defective germination, the land had to be recultivated. Here and there operations were hindered by rainy weather. At the beginning of July a further improvement in crop condition was reported.

*Czechoslovakia* : At the beginning of July, the crop was suffering from low temperatures.

*Yugoslavia* : The rainy weather during the month of June was favorable to the growth of maize, especially in the elevated, dry regions, but on the marshlands, which, however, are not numerous, excessive moisture has damaged the plant, compelling growers to re-sow.

Towards the end of the third week of the month, the plants, which had been delayed in growth by the cold weather, required dry, warm days.

Some days of dry warm weather, during the last ten days of the month, considerably improved the situation of the maize crop, the condition of which on July 1 was considered to be average. Towards the end of the month of June, tillage was in full swing.

*Argentina* (Telegram of 20 July) : The dry cool weather has been beneficial.

*United States* : In the week ended on July 6 showers benefited the crop in the North but other parts of the belt have had only partial relief. Crop progress was good in North-west Missouri but poor to fair in other regions of that State. In Nebraska and Kansas condition was poor.

In the following week to July 13 the weather was scarcely favourable generally and rains were wanted. The weather was too hot in the South-west. In eastern Iowa crop condition was good but poor in the West and South. The crop in western Oklahoma was an almost complete failure.

*French Morocco* : Production of maize promises to be very irregular but on the whole fairly good. In Doukhaba which furnishes about a quarter of the production of Morocco, this cereal looks well and will furnish a crop about double the size of that of last year ; this result is due to the good distribution of winter and spring rains in this region.

At Marrakech, maize and sorghum are progressing favourably.

The maize crop, on the contrary, has been damaged by drought in the Chaonia and particularly in the Abda Ahmar, two regions which produce about one third of the Moroccan crop.

Grasshoppers have appeared in some regions of eastern and central Morocco but, thanks to the measures taken, the damage has been insignificant.

*Union of South Africa*: Threshing began in May and in many areas the damage caused by the continuous drought was only then fully realized. Not only were there many empty cobs but the grain was light and not fully developed. Frost also caused damage to the late-planted crops. Though in some areas estimates show a slight increase the May estimate for the Union is 18,436,000 centals (32,921,000 bushels) against the April estimate of 19,100,000 (34,107,000), this further decrease bringing the crop to a level 39.8 % below that of 1931-32 level and 36.7 % below the average of the five years ending 1930-31.

## RICE

*Bulgaria*: Production of rough rice this year is estimated at 28.8 million pounds against 30.4 million in 1932 and 34.9 million in 1927-31, a decrease of 5.0 % and 17.5 % respectively.

*Italy*: The area sown for 1933-34 is 311,000 acres against 335,000 in 1932-33, a decrease of 7.2 %, and 346,000 for the average of the five years ending 1931-32, a decrease of 10.2 %.

The crop has continued to develop under good conditions. In the first half of June transplanting and cleaning were carried out without difficulty.

*United States*: The 1933 rice area is 767,000 acres compared with 869,000 in 1932 and 952,000 on the average for 1927-1931; percentages: 88.3 and 80.6. Production is estimated, on the basis of crop condition on 1 July, at 1,527 million pounds compared with 1,771 million in 1932 and 1,978 million on the average for 1927-1931; percentages: 86.2 and 77.2.

*India*: According to the Director-General of Observatories a study of forecasting factors indicates that there is an eighty per cent chance of the monsoon rainfall being above normal in the Peninsula (taken to consist of Gujarat, the Konkan, the Bombay Deccan, the Central Provinces, Hyderabad and the north Madras coast) and above ninety-five per cent of the normal in northeast India.

In Bengal rains in June and the first half of July were on the whole light to moderate. Sowing of autumn padi was completed by the middle of June and harvesting had begun in the latter half of the month. Sowing of winter padi continued and by the end of the first decade of July transplanting was progressing favourably.

In Bihar and Orissa rainfall in the latter part of June and the first half of July was on the whole normal or above normal. *Dalua* padi was being harvested and threshed in the Puri district, transplanting of *aghani* padi was begun and sowing of *bhadoi* padi was progressing.

In Madras rainfall in June and the first decade of July was very heavy on the west coast and moderate in the Circars, but in the first half of July it was in most other sections scanty. Sowing and transplanting were proceeding in June. At the beginning of July standing crops were in fair condition.

In the Central Provinces the monsoon was very active in the latter part of June and the first half of July. Sowings began toward the middle of June and were completed in the first decade of July. Germination was satisfactory.

In the United Provinces rainfall has also been very heavy in the same period. At the beginning of July standing crops were doing well and prospects were good.

In Bombay rainfall has been moderately good. By the end of June transplanting had begun.

In Assam precipitation has been normal or above normal; crop condition in mid-July was fair.

*French Indo-China*: The estimate of the crop in Cambodia has now been published; it is, as expected, average and much above that of last year. The rainy-season crop amounts to 1,647 million pounds of rough rice against only 1,070 million in 1931-32, an increase of 58.8 %. The dry-season crop is not exactly known but represents only a very small proportion of the total; it has been harvested on an area of 29,700 acres; against 27,200 acres last year, when it amounted to 33 million pounds of rough rice.

The total production of 1932-33 in Cambodia may thus be taken as practically the same as the average for the five years ending 1930-31, which was 1,696 million pounds. The area harvested (1,683,000 acres) is 10.8 % greater than that of last year (1,519,000 acres) and 3.8 % above the quinquennial mean.

The 1932-33 crop in French Indo-China, harvested on an area a little above that of last year and a little below the average (13,497,000 acres against 13,070,000 and 13,650,000; 103.3 % and 98.9 %), has given a total production of about 13,150 million pounds, 6 % above that of 1931-32 (12,380 million) and 1 % below the quinquennial average (13,240 million).

The area under the crop of the first semester in Annam for 1933 (1933-34) is 946,000 acres, 3.5 % below that of 1932 (981,000 acres) and 9.2 % below the average of 1927-31 (1,042,000 acres).

*Japan*: Favoured by the weather, crop condition on 1 July was fairly good. Stocks on 1 July amounted to 8,482 million pounds against 7,540 million at the same date of last year. Though the market is weaker a pronounced fall in price has been checked by expectations of Government action.

*British Malaya*: Harvesting had been for the most part completed by the end of March and had been brought to a close in the remaining areas by the end of April. It is estimated that in Pahang there was an increase in area of approximately 10,000 acres, bringing the total in the State to 44,790 acres. The crop was generally satisfactory throughout the country; in the greater part of Perak, the Pekan district of Pahang, Malacca, Province Wellesley, Penang and part of Kelantan results are reported good. The 1932-33 crop in Kedah is now estimated at 393 million pounds rough rice, a record.

In April preparation of sawahs and transplanting of the new crop was proceeding in the greater part of Selangor; in North Sembilan and in parts of Pahang nurseries were being prepared.

Precipitation in May was normal or below normal in Kedah, Province Wellesley, and North Krian, above normal from there southward to Negri Sembilan and in Johore, normal in Malacca, Singapore and East Pahang and very dry in Kelantan.

*Egypt*: June was generally favourable to cultivation, germination and growth of *safi* (summer crop). Irrigation water is adequate. The young plants in the areas cultivated during the first week of June were somewhat affected by the great heat during the second week of the month. Growth is satisfactory. Cultivation of the remainder of the late areas, as well as weeding of early crops, is proceeding.

## POTATOES

*Germany* : The abundant rainfall towards the end of June was, in general, favourable to the potato crop ; the work of cleaning has, however, been checked by excessive moisture.

*Austria* : At the beginning of July, the growth of potatoes was very backward. At this period early potatoes were in full flower. Sifting has begun only in isolated cases. The tubers have a high water content and are of average size. Main crop potatoes are beginning to flower in the valleys. Field work has been considerably restricted by the rainy weather.

### Potatoes.

COUNTRIES	AREA					CROP CONDITION (†)								
	1933	1932	Average 1927 to 1931	% 1933										
				1932 = 100	Aver. = 100	I-VII-1933			I-VI-1933			I-VII-1932		
						Thousand acres								
						a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany. . . (s)	...	624	593	...	...	2.5	—	—	2.8	—	—	2.7	—	—
... (t)	...	6,490	6,388	...	...	2.6	—	—	2.8	—	—	2.7	—	—
Austria . . . . .	...	511	467	...	...	2.4	—	—	2.5	—	—	2.0	—	—
Bulgaria. . . . .	37	37	29	100.0	128.9	150	—	—	150	—	—	150	—	—
Finland. . . . .	200	190	176	105.2	113.6	—	—	95	—	—	—	—	—	—
France 1) . . . . .	3,419	3,442	3,585	99.3	95.4	71	—	—	—	—	—	—	64	—
Scotland . . . . .	...	149	137	...	...	110	—	—	102	—	—	—	—	—
Italy . . . . .	987	1,022	871	96.6	113.3	—	—	—	—	—	—	—	—	—
Lithuania . . . . .	...	427	356	...	...	110	—	—	—	—	—	117	—	—
Luxemburg . . . . .	41	40	40	102.5	100.3	2.3	—	—	2.5	—	—	2.6	—	—
Malta . . . . .	7	7	7	95.6	97.9	—	—	—	—	—	—	—	—	—
Netherlands . . . . .	379	435	425	87.1	89.3	—	2) 68	—	—	—	—	—	2) 65	—
Poland . . . . .	...	6,709	6,410	...	...	3.3	—	—	—	—	2.8	3.5	—	—
Switzerland . . . . .	...	115	116	...	...	—	—	93	—	—	98	—	100	—
Czechoslovakia . . . . .	1,835	1,811	1,774	101.3	103.4	2.6	—	—	2.9	—	—	2.5	—	—
Yugoslavia . . . . .	...	595	...	591	...	2) e	—	—	—	—	—	—	—	—
Canada . . . . .	525	521	574	100.7	91.5	—	—	95	—	—	—	—	—	96
United States . . . . .	3,223	3,368	3,208	95.7	100.5	...	...	...	—	—	—	—	—	81.6
Algeria 2) . . . . .	31	24	26	126.5	120.1	—	100	—	—	—	—	—	100	—

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 431. — s) Early potatoes. — t) Late potatoes. — 1) Areas sown to and crop conditions on 1 June. — 2) Middle of the previous month.

*Belgium* : Yields of early varieties are satisfactory but unfortunately for the producers, selling prices are very low.

*France* : The rains in June in all regions favoured the crop.

*Great Britain and Northern Ireland* : In England and Wales warm dry weather continued in the first half of June and was followed by some rain but more was needed at the end of the month. In most districts, although yields of early potatoes were about average, the tubers were small but sound. Main crops were generally strong plants with no undue prevalence of disease. Prospects as regards yields were satisfactory.

In Northern Ireland there is every indication of a satisfactory yield. The crop has grown rapidly with little occurrence of blight. There are still large supplies of old potatoes on many farms and owing to low prices they are being used for feeding purposes.

*Hungary* : Toward 5 July the crop was backward. The leaves were not sufficiently luxuriant. Early varieties had appeared on the market. For the whole country crop condition was a little above the average.

*Netherlands* : In the current year 317,000 acres of potatoes for food and 62,000 acres for starch are under cultivation.

*Poland* : The warmer weather during the first ten days of June and the abundant rains have favoured the potato crop, the condition of which on 15 June had considerably improved compared with the estimate of June 5. During the period 15 June-5 July, the crop condition of potatoes showed no change.

### *Production of potatoes.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932	Average
	Thousand centals			Thousand short tons			= 100	= 100
Bulgaria . . . .	1,698	2,134	1,000	2,829	3,556	1,667	79.6	169.7
Finland . . . .	20,062	21,680	17,978	33,436	36,133	29,963	92.5	111.6
Malta . . . . .	451	564	645	752	941	1,075	80.0	70.0
Netherlands . . .	63,030	81,130	72,235	105,049	135,215	120,423	77.7	87.2
United States . .	183,854	213,953	220,269	306,423	356,589	367,116	85.9	83.5

*Switzerland* : The growth of potato crops has been restricted by adverse conditions and as cleaning could in part, only be effected late, weeds became widespread. If the weather remains good, the crop condition of potatoes seems to have improved.

*Czechoslovakia* : The potato crop, earthing up of which had already been finished or was about to finish, was making good progress. The early potato crop is giving satisfactory yields.

*Yugoslavia* : The frequent and abundant rains of June hindered hoeing and lifting. Despite this delay however, the crop developed very favourably.

*Palestine* : The results from unirrigated crops were poor owing to the exceptional lack of moisture in the soil. Numerous tubers were formed, but failed to mature. The best yields did not exceed one half of a normal crop.

## SUGAR

This year the season, which began in rather unfavourable conditions in most of the sugar-beet producing countries, due principally to the cold weather which predominated during a large part of the spring, steadily improved from May to the beginning of July. The soil is provided with sufficient moisture and sunny and rainy days have alternated opportunely. Growth is strong, the foliage is of good colour, though in some cases a little luxuriant, and the bulbs are well developed. In all of the beet-producing countries, crop condition at the beginning of July was better than in the first few days of June. The beet is suffering a little from drought only in Italy and Spain.



In Germany, Poland and Czechoslovakia, which, during the month of May were not favoured by very beneficial weather conditions, some improvement occurred, which was more marked in Germany and Czechoslovakia and less in Poland, where rainfall was sometimes too heavy. Hail also caused some damage and the rains in some cases hindered field work, with the result that crop condition in Poland varied greatly from one region to another.

*Acreeage of sugar-beet.*

COUNTRIES	1933 *)	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100
		acres			
Germany. . . . .	680,758	541,025	1,014,242	126	67
Austria . . . . .	109,000	105,500	80,693	103	135
Belgium . . . . .	129,700	132,109	148,720	98	87
Bulgaria . . . . .	27,200	29,700	45,149	92	60
Denmark . . . . .	106,000	93,400	90,842	114	117
Spain . . . . .	200,000	201,488	185,230	98	107
Irish Free State . . . . .	13,600	13,686	13,351	99	102
Finland . . . . .	6,800	5,856	5,283	116	129
France. . . . .	648,686	617,200	644,485	105	101
Great Britain. . . . .	340,000	255,464	244,917	133	139
Hungary. . . . .	105,300	82,124	159,395	128	66
Italy . . . . .	210,640	207,334	267,555	102	79
Latvia . . . . .	32,000	21,323	7,191	151	45
Lithuania . . . . .	8,900	13,141	6,978	68	127
Netherlands . . . . .	116,964	99,271	141,020	118	83
Poland. . . . .	255,800	286,200	498,624	89	51
Rumania. . . . .	98,800	45,420	126,905	218	78
Sweden . . . . .	121,454	100,720	90,593	121	134
Switzerland . . . . .	4,000	3,500	3,390	114	117
Czechoslovakia . . . . .	358,400	360,601	594,327	99	60
Yugoslavia . . . . .	53,047	81,887	124,182	65	43
<i>Total Europe a) . . .</i>	<i>3,627,049</i>	<i>3,296,940</i>	<i>4,493,072</i>	<i>110</i>	<i>81</i>
U. S. S. R. . . . .	3,240,000	3) 3,123,000	2,282,002	104	142
<i>Total Europe b) . . .</i>	<i>6,867,049</i>	<i>6,419,949</i>	<i>6,775,074</i>	<i>107</i>	<i>101</i>
Canada . . . . .	42,000	45,000	48,273	93	87
United States . . . . .	947,000	768,000	708,217	123	134
<i>Total North America . . .</i>	<i>989,000</i>	<i>813,000</i>	<i>756,490</i>	<i>122</i>	<i>131</i>
Japan . . . . .	22,151	24,076	23,567	92	94
Turkey . . . . .	55,708	37,383	21,642	149	257
<i>Total Asia . . .</i>	<i>77,859</i>	<i>61,459</i>	<i>45,209</i>	<i>127</i>	<i>172</i>
GENERAL TOTALS. . . { a)	4,693,908	4,171,408	5,294,771	112	89
b)	7,933,908	7,294,408	7,576,773	109	105

\*) Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Average 1929 to 1931. — 2) Year 1931. — 3) Harvested area: sown area was 4,038,000 acres.

In the U. S. S. R. the weather was generally warm but too rainy, causing frequent delays to field work and at the same time favouring the spread of weeds. In certain regions insects caused serious damage. The condition of sugar-beet is however, in general good.

Now that the estimates of the sugar-beet area in Canada and the United States have been received, it has been possible to complete the world table of beet areas in this month's bulletin.

The most noteworthy modifications are those made in the areas for France and the U. S. S. R. The figure for France is that published in the *Journal Officiel*, indicating an increase of 5 % on last year's area. The figure published previously was based on estimates received from reliable private sources, including the Central Committee of Sugar Manufacturers, which indicated a slight decrease compared with the area of 1932.

The figure for the U. S. S. R. was published in the Russian press as relating to the area actually cultivated, whereas the lower figure published last month was that fixed in the plan.

The official estimate of the area under sugar-beet in the United States, shows a very large increase of 23 % compared with last year. A more or less considerable increase compared with 1932 is noted in all States of the Federation without exception. If account is taken of the three most important sugar-beet producing States of the country, it is seen that in Colorado the increase amounts to 22.5 %, in Michigan 25.4 % and in California 5.1 %.

### *Sugar Beet.*

COUNTRIES	CROP CONDITION (†)								
	1st July, 1933			1st June, 1933			1st July, 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany . . . . .	2 6	—	—	2,9	—	—	2,9	—	—
Austria . . . . .	2,5	—	—	2,6	—	—	2,7	—	—
Bulgaria . . . . .	110	—	—	110	—	—	—	—	95
Scotland . . . . .	—	100	—	—	—	—	—	—	—
Lithuania . . . . .	103	—	—	—	—	—	—	—	—
Netherlands 1)	71	—	—	—	—	—	—	—	61
Poland 1)	—	3,0	—	—	—	—	—	3,0	—
Switzerland . . . . .	—	—	98	—	—	—	—	—	—
Czechoslovakia . . . . .	2,8	—	—	—	—	3,2	2,6	—	—
Yugoslavia 1)	e)	—	—	—	—	—	—	—	—
Canada . . . . .	—	—	94	—	—	—	—	—	92

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 431.  
1) Middle of preceding month.

It appears that the current U. S. estimate is still too low and that it should, according to information received, exceed one million acres. In any case, if the area remains as indicated in the table, it will be the largest ever recorded in the United States.

Summarizing, it may be said that in the various continents the areas sown to sugar-beet during 1933 exceed those of last year as well as the average for 1927-1931.

E. R.

*Germany* : The abundant precipitation of the latter half of June favoured roots save on heavy and impermeable lands but made hoeing difficult.

The analyses of the second week of July gave the following results : average weight of root 3.8 ounces, average weight of leaves 14.8 ounces, sugar content 0.9 %, weight of sugar per root 0.3 ounces.

According to the analyses in the third week of July the average weight per root is 5.5 ounces, that of leaves 18.1 ounces, sugar content is 9.9 % and weight of sugar per root 0.5 ounces.

*Austria*: At the beginning of July sugar beet foliage showed a very vigorous growth detrimental to the formation of tubers.

### *Production of Cane-sugar.*

COUNTRIES.	1932-33 1)	1931-32	Average 1926-27 to 1930-31	1932-33 1)	1931-32	Average 1926-27 to 1930-31	Percentages for 1932-33	
							1931-32 = 100	Average = 100
	Thousand cents			Short tons			%	
AMERICA.								
Argentina . . . . .	7,665	7,623	8,758	383,253	381,120	437,919	101	87
Barbados . . . . .	2,238	1,865	1,338	111,890	93,250	66,897	120	167
Brazil . . . . .	224	432	442	11,200	21,625	22,095	52	51
Cuba . . . . .	21,385	21,826	19,586	1,080,000	1,090,000	979,281	98	109
Ecuador . . . . .	44,680	58,336	96,318	2,234,023	2,916,807	4,815,835	77	46
Guadeloupe . . . . .	265	504	442	13,000	25,000	22,084	52	60
United States (La.) . .	4,455	3,139	2,536	222,760	157,000	126,798	142	176
British Guiana . . . .	551	507	519	28,000	25,000	25,949	109	106
Jamaica . . . . .	3,024	3,329	2,696	151,200	166,469	134,774	91	112
Mexico . . . . .	1,254	1,310	1,304	62,720	65,500	65,181	96	96
Paraguay . . . . .	3,965	5,161	4,433	198,240	258,000	221,655	77	89
Peru . . . . .	154	185	118	7,700	9,260	5,920	83	130
Puerto Rico . . . . .	8,819	8,868	8,690	440,000	443,400	434,506	99	101
Dominican Republic . .	16,326	19,849	14,439	816,295	992,423	721,935	82	113
Trinidad and Tobago . .	9,414	9,579	7,749	471,000	478,931	387,455	98	121
	2,240	2,186	1,800	112,000	109,309	90,020	102	124
Total America . . . .	126,659	144,699	171,168	6,343,281	7,233,094	8,558,304	87	74
ASIA.								
Formosa . . . . .	15,452	21,805	14,940	772,586	1,090,249	746,981	71	103
India . . . . .	104,182	88,928	67,514	5,209,120	4,446,400	3,375,680	117	154
Japan . . . . .	1,773	2,458	1,932	88,668	122,907	96,620	72	92
Java . . . . .	29,942	57,320	59,818	1,497,089	2,900,000	2,990,857	52	50
Philippine Is. . . . .	23,590	20,944	17,906	1,180,000	1,050,000	895,262	113	132
Total Asia . . . . .	174,939	191,455	162,110	8,747,463	9,609,556	8,105,420	91	108
AFRICA.								
Belgian Congo . . . . .	99	49	19	4,960	2,425	929	204	534
Egypt . . . . .	3,754	3,249	2,209	187,704	162,472	110,463	115	170
Mauritius . . . . .	5,450	3,616	4,952	272,500	180,790	247,577	151	110
Reunion . . . . .	1,197	946	1,073	59,868	47,312	53,643	126	112
Union of South Africa . .	7,178	6,518	5,910	358,905	325,900	295,498	110	121
Total Africa . . . . .	17,678	14,378	14,163	883,937	718,899	708,110	123	125
OCEANIA.								
Australia . . . . .	12,119	13,148	11,365	605,900	657,400	568,236	92	107
Hawaii . . . . .	20,184	19,960	18,113	1,009,200	998,000	905,655	101	111
Fiji Is. . . . .	3,069	1,786	1,967	153,400	89,300	98,325	172	156
Total Oceania . . . . .	35,372	34,894	31,445	1,768,500	1,744,700	1,572,216	101	112
GENERAL TOTALS . . .	354,648	385,426	378,886	17,743,181	19,306,249	18,944,050	92	94

a) Sugar. — b) Molasses reduced to terms of sugar. — 1) Approximate data. — 2) Average 1929-30 to 1930-31.

*Belgium* : The losses caused by fly are small, the wet cold weather having checked the development of insects.

*Bulgaria* : A slight reduction of area and the unfavourable weather during June particularly excessive humidity and hail, have led to production this year being only 4,098,000 centals (204,900 short tons), against 5,291,000 (264,600) in 1932 and 5,893,000 (294,700) in 1927-31, a decrease respectively of 22.5 % and 30.5 %.

*Great Britain* : In England and Wales. Dry weather continued in the first half of June followed by some thunder showers. More rain was generally needed at the end of June. Sugar beet has grown well after being singled and hoed and the plants were strong and healthy.

*Hungary* : Toward 5 July the roots were developing well. The leaves covered the ground and had a fresh green colour. For the country as a whole crop condition was good.

*Italy* : The sugar beet situation considerably improved during the latter half of June.

*Netherlands* : Production of sugar beet this year will be about 38,740,000 centals (1,940,000 short tons) against 34,610,000 (1,730,000) in 1932 and 41,192,000 (2,060,000) on the average of the five years ending 1931. Percentages 112.0 and 94.0

*Czechoslovakia* : The beet is making good progress, especially that sown early.

*Yugoslavia* : The abundant rains of June greatly favoured the crop. No weather or insect damage is reported. Insects have not, despite the excessive humidity, any great diffusion, thanks to the cold weather of June.

*Barbados* : By the end of the first decade of June grinding had been completed in the South and North and harvesting was expected to be over in practically all remaining districts before the end of the month. The factories have this year harvested a record proportion of the total crop; a number of estates that previously utilized their canes for syrup sold the whole or part to the factories.

Since the end of the second decade of May only a few light showers had fallen and in the coastal districts the young cane was beginning to show the effects of the prolonged dry weather.

*United States* : Production of sugar-beet this year will be about 193,640,000 centals (9,682,000 sh. tons) against 179,820,000 (8,991,000) in 1932 and 157,084,000 (7,854,200) on the average of the five years ending 1931. Percentages: 108 and 123.

*British Guiana* : Weather in May continued favourable. The spring crop, of which grinding was terminated on 13 May, amounted to 1,330,000 centals (66,500 short tons) of sugar against 1,284,000 (64,200) in 1932.

*Jamaica* : The hurricane of 1 July resulted in large areas in the West being inundated.

*Trinidad* : The continued dry weather enabled almost all the factories to complete their campaign by the end of the first decade of June and Usine Ste. Madeleine, the largest, was expected to finish grinding by the end of the month. Production of sugar was forecast at 2,464,000 centals (123,200 short tons), a record.

*S. Lucia* : Harvesting was completed in May. Plant cane and ratoons for the next crop are in active growth.

*India* : On 3 July crop condition was reported good. Rainfall in the latter part of June and the first half of July was on the whole normal or above normal.

*Egypt* : Crop condition is satisfactory thanks to the favourable weather. Irrigation water is adequate. Hoeing and manuring is proceeding. Crop condition on 1 July was 102 against 100 on 1 June 1933 and 101 on 1 July 1932.

*Reunion* : The crop on the leeward side suffered from inadequacy of rains but on the windward precipitation was satisfactory. No cryptogamic disease is reported.

*Union of South Africa* : May was very dry and hot over the sugar belt and at the end of the month the cane was suffering from the drought with the result that in some areas an exceptional tonnage had to be rejected.

## VINES

In general, the vineyards of the northern hemisphere have wintered well in relatively mild and rather damp weather. Spring conditions, however, varied greatly according to region.

Rather cold and rainy weather in the non-Mediterranean regions (western, central and eastern France, northern Italy, central Europe) rather hindered growth, flowering and fruit formation; dropping is fairly frequent. Late frosts in April and May caused fairly important though localized damage in certain vineyards, for example in the East and East-central area of France.

In June bad weather prevailed in central Italy, north-eastern Spain and the Balkans; in the latter area damage was not very important because the growth of the vines there was fairly advanced but in the former two areas it hindered flowering and fruit formation. It moreover led to an appearance of cryptogamic disease; until now the damage is, however, limited. Vine moth eudemis and vine pyralid have also caused some losses.

Fine weather again set in nearly everywhere in the first few days of July, bringing a recovery in condition, which was, however, in general not greatly compromised. Only the vineyards of east-central and eastern France (Burgundy and Alsace especially) those of northern and central Italy and generally those of central Europe (Switzerland, Luxemburg, Germany, Austria, Czechoslovakia) are in mediocre condition; their production already seems to be decidedly below that of last year and the average, due also to the fact that fruit formation was not very abundant.

The vineyards in the more southern regions (southern France and Italy, the larger part of the Iberian Peninsular and Greece, Northern Africa and the Levant) have benefited from the fairly favourable but on the whole rather dry conditions. Some localized damage of minimum importance is reported, but on the whole the condition of vineyards there is good, or even very good; rains at the end of June contributed beneficial moisture after a rather long period of prolonged drought. The vines are generally healthy, despite some insect damage; cryptogamic disease has appeared only occasionally for brief periods.

Taking into consideration the present condition of the vines it may be said that prospects are good, even very good, and in any case above the average in North Africa, the Iberian peninsular, Greece and the Levant good average in the Balkans and France, except in some vineyards *de cru* important for the quality of their wines but not for the volume of their production, a low average in Italy and only passable in Central Europe.

Crop condition gives prospects in the northern hemisphere as a whole of a good production of the same order as those of the last two years, if not larger and in any case appreciably above the average. In arriving at this conclusion account is also taken of the increase in productive area and of the coming into bearing of plantings made in previous years, which do not appear to have exactly compensated for the pulling up of old vines.

Present crop condition permits hope of quality distinctly superior to that of last year and very good on the whole save perhaps in Central and Northern Italy.

The new crop prospects have begun to influence the tendency of the market, causing a fairly strong recovery in Italy, Hungary and some Danubian countries but accentuating the calm in France and Spain. The large volume still remaining to be marketed in the last three months of the season and the high proportion of wines of low degree remain nevertheless decisive factors in the trade, whether they accentuate the quietness and tendency to decline, as in France, or hinder recovery, as in Italy and other countries; if prices are fairly well maintained in Spain and Greece, this is in part due to the export movement toward France but also because the quantities remaining in these countries are small. It should be noted that in France the crisis in the wine trade is accentuated by the constant diminution of wine consumption and the introduction of Algerian and foreign wines, which have caused a glut, no less than by the uncertainty regarding the application and effects of the recently passed Wine Law, which reinforces the regulations of the law of July 1931.

In the *southern hemisphere* the only information concerns Australia, where a crop hardly up to the average accentuates the paralysis of the wine trade and the very serious viticultural crisis; exports have, however, shown a market increase.

P. de V.

*Germany*: The wet, cool weather in June checked the growth of vines. Flowering, owing to lack of sunshine, could make only slow progress and was adversely affected in some places by excessive precipitation. A large invasion of insects was reported.

The condition of vines at the beginning of July was average or 2.8 against 2.7 at the beginning of June 1933 and 2.3 at the beginning of July 1932.

*Austria*: At the beginning of July growth was vigorous. Flowering has been exceptionally prolonged due to the cold wet weather. Crop condition on 1 July was 2.6 against 2.8 on 1 June 1933 and 1.8 on 1 July 1932.

*Bulgaria*: The rather cool and rainy weather of June was not too favourable and hail damage occurred. Despite these adverse conditions, however, crop condition at the end of the month was good.

*Spain* : The weather in June was not very favourable to vines. In the East, especially in the districts of Barcelona and Valencia, the rainy and rather cold weather caused damage and provoked rather serious attacks of mildew ; in some parts of the Centre (Cuenca and Albacete)-crop condition was not very good. In the other areas condition was, however, very satisfactory. On the whole the present condition of the vines indicates a good average crop.

Though there has been a certain activity in the trade in white wines of La Mancha, due partly to shipments to France, the majority of markets are quiet ; business is often hindered by the poor quality of the wines remaining from the last crop, which on the whole do not seem to be very plentiful. Prices, generally fairly well maintained, show in places a certain downward tendency.

*France* : According to the estimate made in May-June, the area of vines in bearing has again increased by 0.9 %, having passed from 4,006,000 acres in the spring of 1932 to 4,042,000 ; compared with the average area of the period 1927-1931 (3,761,000 acres), the increase is 7.5 %.

It should be noted that the figure for 1931 was revised last year and reduced from 3,971,000 to 3,830,000 acres. The exceptional increase in the productive area, therefore, instead of taking place between 1930 and 1931, should be attributed to 1932. The increase, in this year, which amounted to 175,000 acres, is absolutely abnormal since it does not correspond, in the statistics of previous years, to a corresponding increase of new plantations which should have come into bearing in 1932.

During the period 1924 to 1929, the new plantings, which were fairly numerous, were largely offset by the destruction of old vines or those in existence in certain regions where vine growing is diminishing. In 1928 the area in bearing was 82,000 acres smaller than in 1924 and the total area 40,000 acres smaller than that of 1926 ; the vine area not yet in bearing but destined to bear between 1930 and 1932, was 163,000 acres. During the same period, the productive area increased by 259,000 acres, reaching, in 1932, an area 91,000 acres larger than the total area of 1929.

In order to explain this anomaly, it must be supposed that in previous years, the total area was under-estimated, or that the new plantations were not taken into account or further, that vines were stated to have been pulled up when they had not been or again, that in 1932 the area in bearing was overstated and included new plantations which the law of July 1931 prohibited.

The increase in the vine area in bearing in 1932 in any case appeared to be an artificial occurrence.

In 1933 the area recontinued its normal trend when the new plantations reached bearing age.

The increase in the area in bearing is, moreover, as in previous years, the result of two opposite factors, on the one hand, an increase in the areas of large production, the South and South-west and a decrease in the other regions, especially in the vineyards producing fine wines.

Of the four large producing departments, only the eastern Pyrenees have not experienced any variations ; their total area has increased by 2.1 % passing from 1,173,000 acres to 1,198,000 acres. Among the other southern vineyards, that of Var has increased by 25,000 acres, or 16.4 %. For the whole of the southern region, the increase is over 62,000 acres or 4 %.

The vineyards of the Upper Languedoc and Gascogne have also been increased by over 2 % or 8,200 acres.

In the Bordelais, Alsace, Lorraine, and Champagne, the area remains constant, whereas it has decreased in all other regions in a proportion varying from 2 to 4 %,

especially in the Charentes, the Loire valley, Burgundy and on the banks of the Rhône.

Since 1923, the vineyard area in the South has increased by nearly 237,000 acres or nearly 17 %, that in the Southwest by 104,000 acres or nearly 10 %, whereas a decrease of 101,000 acres or 8 % has taken place for the other regions together.

On June 1, the crop condition of vines was 69 whereas last year it was 68. It should be noted that crop condition is particularly good in the regions of large production, in the South where the condition is 76 against 69 and in the Southwest where it is 68 against 65 ; condition often reached 80 in the principal producing areas, particularly in lower Languedoc, Roussillon and the Gironde.

In the other regions they are lower, on the contrary, than those of last year, but whereas they are satisfactory in the west and the Loire valley, they vary from fair to fairly good in the east-central area (Burgundy, the Rhône valley, the Juras) the East and the central massif.

The conditions which prevailed during June and at the beginning of July were fairly favourable in most vineyards, except those of the East-central area – Burgundy Beaujolais and the Rhône valley – where prospects are mediocre, due to the bad weather at flowering time, late frosts and damage by vine moth and endemias ; in Alsace also violent storms occurred in the vineyards, the flowering of which had already been delayed by cool, damp weather.

In all of the other large vineyards, the situation has remained good as on 1 June or has slightly improved either as in the South, due to the rains which ended the June drought, or due to the fine, warm weather which set in everywhere at the beginning of July, greatly favouring the vines and repairing the slight damage in the South-west and West, by previous rains. Cryptogamic disease has so far made only very local and not very important appearances ; vine moth, endemias, vine pyralid and hail-hawe caused some damage which is not on the whole, very serious.

The aspect of vines is generally good though the quantity of grapes is not very large. The crop appears to be a very good average and in any case greatly superior to that of last year. Quality promises to be good both in the South and in the vineyards of Bordelais, the Loire and Champagne valleys and better than in the last two years.

The trade situation has been aggravated by the prospects for a good crop and also by the uncertainty caused by latest viticultural law. After the activity at the beginning of May, business slackened.

Viticulturalists are experiencing great difficulty in selling their remaining quantities trade sales again slackened in May with the result that at the end of this month, the total sales of producers' stocks were 108 Imperial gallons (129 American gallons) smaller than those of the same period of last year ; this decrease has been made exclusively by the large producing departments of the South. It has been almost exactly compensated for by an increase of imports, those of ordinary wines in the cask from Algeria and Tunis being, for the first eight months of the season, 86 million Imp. gallons (103 million Am. gallons) larger and those from abroad 22 million Imp. gallons (26 million Am. gallons) larger than the corresponding ones of last season. The imports from Spain quadrupled in the first eight months but were greatly reduced in May ; those of Greece have increased more than tenfold ; trade consumption slightly increased again in May but the total quantity of wines levied was, for the first eight months of the season, 20 million Imp. gallons (24 million Am. gallons) smaller than last year. Trade stocks on May 31 were consequently larger. Exports continued to decrease.



Prices show a tendency to fall owing to the numerous offers made to dispose of the previous crop. As the trade is supplied with wines of high degree, only wines of inferior quality are purchased, but offers exceed demand.

*Greece* : According to supplementary information from the Ministry of National Economy, the area of vines for must production in 1932 has been reduced from the previous estimate of 352,000 acres to 344,000 acres. Data on the area of vines this year is not yet available. According to the most recent information, the storms in June caused no serious damage. A fairly abundant production is therefore expected.

*Hungary* : The growth of vines is in general slow owing to the rather cold weather. It is estimated that the delay to growth compared with the normal is about two or three weeks. Towards July 5 flowering had, in part, been finished. The wet weather favoured the propagation of mildew. Up to the date mentioned, no damage by mildew was reported.

*Italy* : June was rather rainy and cold, especially in northern and central Italy where the vines suffered from bad weather. Growth has been delayed; flowering, especially in Piedmont and Tuscany, has taken place under not very favourable conditions. And in places, fairly profuse dropping is reported; fruit formation has also been fairly irregular. If it is added that the latter was not very abundant, it is evident that production will be much smaller; information from private sources indicates a crop  $\frac{1}{5}$  to  $\frac{1}{3}$  smaller than that of last year in the regions Piedmont, Lombardy, Venetia, Marche, Umbria, Tuscany, Latium, Abruzzi and Campania). Until now the relatively low temperatures and repeated treatments have restricted the spreading of cryptogamic disease but, at the beginning of July the latter appeared, particularly in Piedmont, where an attack of mildew is reported. Vine moth has also caused some damage.

The vineyards of southern and insular Italy are, on the contrary, in good, healthy condition. Flowering and bud formation have taken place under good conditions. The quantity of grapes is generally above the average.

In Apulia and Calabria, the present situation in the vineyards permits the forecast of a crop nearly  $\frac{1}{5}$  larger than that of last year; in Sicily and Sardinia, it will be nearly equal or slightly larger.

On the whole the crop should be about  $\frac{1}{5}$  smaller than that of last year. This estimate corresponds only to the present condition of the vines and particularly as an indication of the maximum.

This considerable modification of prospects has led to a fairly pronounced activity which has become accentuated during June and the first few days of July. The demand in the North for good wines from the South has become fairly active and prices of these wines have risen. There are no large quantities left; although there apparently remains a fairly large proportion of the last crop in Sicily and in Sardinia ( $\frac{1}{4}$  in the former region and more in the latter, according to certain information), in Apulia there remain only small quantities. In the central and northern regions stocks are still relatively large, consisting of wines of poor quality, which should be difficult to sell before the coming vintage.

Though the home trade in wine has become fairly active, exports abroad, to Switzerland, France and Germany remain small.

*Luxemburg* : The cold and rainy weather of the latter half of June prejudiced flowering and grape formation is generally poor. Vine moth is reported.

The crop condition of vines on July 1 was 3.3 according to the system of the country against 2.8 on June 1 1933 and on 1 July 1932.

*Portugal* : Growth is vigorous. Flowering and fruiting were very good and oïdium damage is insignificant. A very large crop is therefore expected.

*Rumania* : In the latter half of June crop condition was generally good.

*Switzerland* : The persistence of dry weather in June has contributed to delay the growth of vines. Flowering has taken place late but was rapid during the fine days at the end of June. Until now mildew has been combatted successfully ; in places worms have spread. Crop condition on 1 July was 70 against 66 on 1 June 1933 and 101 on 1 July 1932.

*Czechoslovakia* : Toward the end of June crop condition in Slovakia was good.

*Yugoslavia* : The very wet weather of June favoured the spread of cryptogamic diseases, which were not, however, very serious thanks to chemical treatment and cold weather. In some districts hail damage is reported. Despite all these unfavourable factors crop condition on 15 June was good to very good.

*United States* : The crop condition of grapes in the United States on 1 July 1933 was 72.3 against 80.7 at the same date of last year.

*Palestine* : In general the flowering and setting of vines was good. It is anticipated that on unirrigated areas berries will be small and sweet owing to the lack of soil moisture. Irrigated vineyards are promising.

*Algeria* : The rains at the end of May and beginning of June were beneficial and flowering took place under good conditions ; they caused, however, an attack of mildew and oïdium, principally on the coastal plains of the east ; energetic countermeasures have prevented the extension of the disease, which has caused serious damage only in certain vineyards in the east. On the whole the damage appears to be of small importance, losses being quite restricted.

Eudemis is causing rather serious anxiety in the department of Algiers, where the attack is extremely irregular but in certain vineyards heavy.

The general situation is satisfactory ; crop condition on 1 July was average (100), exactly the same as last year at the same date. There is still a month before the vintage begins.

The wine trade remained quiet in May and June ; Algerian markets had at the end of June not yet felt the effect of the recovery experienced on the markets of southern France.

*Egypt* : Flowering of vines took place under excellent conditions. Vines cultivated in orchards under irrigation were on 1 June in good condition.

*French Morocco* : June was fairly dry but not too warm. The vines in general looked well at the end of the month despite the existence of some powdery vine mildew in the Fès, Meknès and Chaouia areas. In Doukkala the first grapes reached maturity at the end of June ; the grapes are there very irregular in size owing to the very variable flowering.

Field work, debudding and anticryptogamic treatment proceeded under good conditions in June.

Grasshoppers have caused some very localized and on the whole unimportant damage.

*Tunis* : The crop condition of vines on 1 July was good or 120 by the Institute's system as on 1 June last and on 1 July 1932. During the month, however, slight but frequent rains have favoured the spreading of cryptogamic disease.

*Australia* : Reports from the various Australian States at vintage time indicated that the crop this year is higher than that of last year.

In South Australia, which produces nearly four-fifths of the quantity of wine made in Australia, a higher yield than last year is certain, even if all the growers cannot get rid of their grapes. Last year the yield of this State was 118,400 tons (2,652,000 centals) of grapes, of which 59,202 tons (1,326,000 centals) were used for wine-making. The quantity of wine made this year has been greater than in 1932 or 1931, years which gave respectively 10,680,000 Imperial gallons (12,826,000 American gallons) and 10,131,000 Imperial gallons (12,166,000 American gallons), but it is to be expected that it will be below the average of 13,269,000 Imperial gallons (15,935,000 American gallons) for the past five seasons. The area of the vineyards is, a little greater than in 1931, being 52,488 acres instead of 52,234 ; 33,572 acres are described as being grown for wine and, of the remainder, 18,379 acres are devoted to currants, raisins and lexias for drying and 547 acres to the production of table grapes. These totals do not take into account the back-garden and trellised vines belonging to suburban residences, production of which is far from being negligible.

For Victoria, which is the first producer of the Commonwealth for raisins and currants, the Department of Agriculture reports bumper crops, though the weather during autumn was dry and the conditions were cool to cold. The vintage has been carried out under ideal weather conditions, the grapes coming in in excellent condition. Densities have been better than for several years past and the wines are of high quality. The quantities vary but the total weight of grapes is in very much better condition than last year. A much smaller quantity has been distilled, and correspondingly more wine has been made. At Great Western compensation for several poor vintages is found this year in the record yield and the promise of high quality wines suitable for champagne-making.

In New South Wales, a record tonnage will have been processed by the wineries of the State. The yields of the Murrumbidgee Irrigation Area have exceeded expectation and record quantities have been handled.

On the whole, Australian wine production is certainly higher than last year, which gave 14,131,000 Imperial gallons (16,970,000 American gallons) and seems to be not far below the average of the last five years, which was 17,101,000 Imperial gallons (20,537,000 American gallons); nevertheless, it is to be taken into account that, especially in South Australia, quite a large tonnage of certain varieties will not have been harvested, owing to mediocre quality and the low prices offered by wine makers. A good many of the wineries were not working full time and this is due to the fact that most of the wine cellars have a surplus of wine on hand. Many of the growers intended to convert the juice into spirit for fortifying purposes. In many cases the prices paid by winemakers were below the price fixed by the Government.

## OLIVES

*Greece* : The most recent estimate of olive-oil production in 1932 shows a further increase from the 2,535,000 centals (33,316,000 American gallons) of the first estimate, the 2,579,000 (33,890,000) of the second estimate and the 2,636,000 (34,643,000) of the third estimate to 2,961,000 (38,913,000). According the last estimate production in 1932 was 29.5 % greater than in 1931 and 63.5 % greater than the 1926-30 average.

*Italy* : Flowering took place under good conditions.

*Portugal* : Flowering has been exuberant but in some areas mists have prejudiced fecundation. In other areas incessant wind has caused shedding. On the whole, however, a production much larger than that of last year is expected.

*Palestine* : Olives have set well in most places, but in some areas the flowering is not yet over.

*Turkey* : The abundant rains which fell towards the end of June and at the beginning of July in the Aegean region, were very favorable to the olive crop. Olive production this year in the Ayvalik district will be about 40 % larger than that of last year.

*Algeria* : The rains of the first half of June were beneficial. Due to the scirocco at the period of flowering in some districts of the centre and east more or less abundant shedding has been reported but on the whole flowering and fruit formation have been fairly good and in Oran even very abundant. For the time being no insect damage or disease is reported.

Condition of the groves remained average (100) on 1 July, as at the beginning of the preceding month. A more abundant crop than that of last year is expected.

*Egypt* : Flowering took place under excellent conditions. Olive-trees are cultivated in orchards under irrigation. The total area covered is 1,350 acres, while that in bearing covers 670 acres. These data are this year published for the first time. Crop condition as on 1 June was average.

*French Morocco* : June was a dry month in most regions; some local showers fell in the Fès-Meknès region; the level of subsoil moisture is, however, fairly high. The temperature was not very high, except at Meknès.

Crop condition and the appearance of the crop are rather variable. In eastern Morocco, flowering was abundant in Meknès, fruit formation was poor owing to the persistent heat. In Marrakesh, which is one of the most important districts for olives, flowering did not take place under good conditions.

*Tunis* : Crop condition on 1 July remained good and was estimated at 120 by the Institute's system as on 1 June 1933 and 1 July 1932.

## COTTON

On 8 July the first report of the U. S. Government for the cotton season 1933-34 was published, containing the first estimate of area in cultivation on 1 July 1933, which is 11.6 % larger than the area in cultivation on 1 July 1932, 4.3 % larger than that of 1931, and only 11.3 % smaller than that of 1925, the largest so far recorded (1). All States, without exception show increases compared with last year, especially Texas (16 %) and Oklahoma (30 %) which have, together, extended their cotton area by about 3,130,000 acres or nearly three quarters of the total increase in the United States compared with last year.

The Government's estimate is higher than all private estimates, but has nevertheless had no influence on the market which, in anticipation of the execution of the Government's plan to cause farmers to destroy about one quarter of the standing crops, and also because of the general rise in the prices of raw

(1) It should be recollected that the Department of Agriculture at Washington has made wide revision in its estimates of the areas in cultivation and harvested in the United States, as well as of the yields per acre of ginned cotton obtained, for the years 1866-1931. These revised estimates have been published in a special report issued at Washington on 10 May 1933, by the Department of Agriculture. The data for the cotton seasons 1932-33 and 1933-34 are consequently not comparable with

materials, continues its tendency to rise noted since last March. Industrial home consumption has recovered and the figure for June well exceeded all preceding figures, including even the record figure for March 1927. This recovery is apparently due to the efforts made by the industry to obtain supplies before the application of the processing tax which the Government is considering with a view to the financing of its cotton program. Another bullish factor is the persistent drought which is threatening crops in the western section of the cotton belt (Texas and Oklahoma).

The first official forecast of production will appear on 8 August. It is considered that by this date, the Government plan will have entered into force.

The Egyptian Government published on 15 July its estimate of the cotton area in cultivation in the season 1933-34. The detailed report containing the areas under each variety will be published on 7 August. The area cultivated this year is 65 % larger than that of last year, which was the smallest since 1896. This increase is due to the almost complete abandonment of the restrictive measures adopted by the Government during the last two seasons. The crops are generally backward, especially in the Delta, the weather having very often been unfavourable and abnormal for the season ; but the abundance of irrigation water and labour and the improvement of credit conditions permit the forecast of a satisfactory crop. As regards attacks of parasites, these have in all ways possible been combatted energetically and no appreciable damage is reported. Government stocks are nearly exhausted and the total stock at Alexandria on 7 July was much smaller than the corresponding ones of the last two years.

The market closely follows American quotations and fluctuates in accordance with the variations in the dollar-sterling exchange.

There is nothing of particular importance to report as regards the cotton season in India.

As regards the U. S. S. R., the most recent information available is given below.

I. S.

the figures published previously for preceding seasons. The comparisons published in the present Bulletin and in that of June, all refer to the revised estimates, which are given below for the seasons from 1923-24 onwards :

Season	Acreage in cultivation (a) 1,000 acres	Acreage harvested	Yield of ginned cotton per acre lb.	Production of ginned cotton 1,000 bales 478 lb. net
1923-24. . . . .	37,000	35,550	136.4	10,140
1924-25. . . . .	40,692	39,503	165.0	13,628
1925-26. . . . .	45,972	44,390	173.5	16,104
1926-27. . . . .	45,847	44,616	192.8	17,977
1927-28. . . . .	39,479	38,349	161.7	12,956
1928-29. . . . .	43,735	42,432	163.3	14,478
1929-30. . . . .	44,458	43,242	164.1	14,825
1930-31. . . . .	43,339	42,454	157.0	13,932
1931-32. . . . .	39,109	38,705	211.5	17,096
1932-33. . . . .	36,542	35,939	173.3	13,002
1933-34. . . . .	40,798	..	..	..

(a) From 1927 estimates of area in cultivation relate to 1 July; prior to 1927 to 25 June.

*U. S. S. R.* : According to the most recent data the area of cotton harvested in the 1932-33 season was 5,139,000 acres against 5,346,000 in 1931-32 and 2,503,000 on the average for the five-year period ending 1930-31. Percentages: 96.1 and 205.3.

Production of ginned cotton during the season 1932-33 was 8,497,000 centals (1,778,000 bales) against 8,812,000 (1,843,000) in 1931-32 and 5,695,000 (1,191,000) on the average for the preceding five seasons. Percentages: 96.4 and 119.2.

In the following table are given the data regarding the Government plan for the current season compared with the preliminary data for 1932-33.

	1933-34 (plan)	1932-33 (provisional data)	Percentage increase (+) or decrease (-)
Area (1000 acres) . . . . .	5,108	5,139	— 0.6
Yield of unginned cotton per acre (cent.) . . . . .	6.2	5.2	+ 18.1
Total production of unginned cotton (000 cent.) . . . . .	31,570	26,804	+ 17.7
Ginning yield (%) . . . . .	31.9	31.7	—
Total production of ginned cotton (000 cent.) . . . . .	10,069	8,497	+ 18.5
(000 bales) . . . . .	2,106	1,778	+ 18.5

The area which should have been sown during the current season was consequently only 0.6 % below that on which the crop was obtained in the preceding season. The area sown in the current season has not so far been precisely stated. Indirectly, however, on the basis of data for the areas hoed and cleared, it may be estimated at 4,858,000 acres, 5.5 % less than the area harvested in 1932-33 (5,138,900 acres) but 49.5 % above the average of the five years ending 1931-32 (3,249,000 acres).

*United States* : The acreage of cotton in cultivation on 1 July 1933, according to the first estimate of 8 July, was 40,798,000 acres against 36,542,000 on 1 July 1932 and an average of 42,024,000 for the five-year period 1927-31; percentages: 111.6 and 97.1. The figures for last year and the average have been revised and cannot be compared with those published by the United States before 10 May 1933, the date on which a bulletin of the Department of Agriculture was issued giving the revised figures of acreage and yield from 1866 to 1931. The first estimate of area in cultivation on 1 July 1933 does not take into account the reductions in area which farmers may make according to the Government programme. The first estimate of production will be published on 8 August.

In the week ended on 21 June growth was rather slow over most of the belt owing to the prevailing coolness, especially in the first part of the week, when temperatures averaged considerably below normal. Little rain fell during the week. In Texas, progress and condition of the crop were very good to excellent except in the extreme west where it was only poor to good. Growth was retarded in Virginia and frosts caused some damage; stands were fair; in North Carolina progress and condition varied from fair to good. Fairly good progress was made in Georgia. In Alabama, late-planted cotton was at a standstill. Growth was also slow in Oklahoma. In Arkansas progress varied from fairly good to very good. In the following week, growth was in general fair to good despite the dry weather. Some showers fell in the

eastern sections but western portions remained virtually rainless. Fields were generally clean and plants were beginning to bloom northward to North Carolina and eastern Oklahoma. The season was one to two weeks late in Texas. In Arkansas progress was very good and squares and bloom were reported in many localities. In Alabama condition was fair to good and in Georgia, where some showers fell locally, generally good to excellent. In North Carolina large areas still remained dry ; in South Carolina crop progress was good and blooms were forming freely.

In the first week of July the weather was extremely warm with little or no rain in the western part of the belt. Some showers fell in the eastern section. In Texas rain was badly needed, especially for late-sown crops. In the week ended on July 12 the weather was warm with only light, scattered showers in the western belt; moderate rainfall brought about an improvement in the eastern belt. In Texas, early planted cotton progressed favourably in most sections but late planted cotton still badly needed rain. In Oklahoma and Alabama, crop condition was mostly fair to good ; in Georgia good to excellent .

In the third week of the month the weather was favourable in the eastern section but unfavourable in the western section. In Texas condition was irregular.

*India* : In Bombay the crop has been hampered by white ants in north and middle Sind. In the Central Provinces sowing was nearing completion in Nagpur and Berar in the first days of July.

*French West Africa* : The results of the cotton season in Dahomey have been fairly satisfactory.

*Algeria* : The cultivation of cotton remains insignificant, covering scarcely 250 acres, though the average of the five years ending 1931-32 was 10,700 acres and in 1926 it covered nearly 22,000 acres.

The rains in the first half of June were satisfactory and crop condition on 1 July was 90, a little below that of a year previously (100).

*Egypt* : In June the weather was generally favourable ; the plants made up part of the leeway and condition was satisfactory, but in some districts of the Delta they were still about 10 days late. Toward mid-July flowering was beginning to be general and boll formation showed normal density.

Insect attacks had so far not caused damage and were being energetically combated. Irrigation water was sufficient, the level of the Nile being above normal. The area cultivated is 1,873,000 acres against 1,135,000 last year, an increase of 65.0 %, and 1,840,000 on the average of 1927-31, an increase of 1.8 %.

*Uganda* : Weather conditions during the month of May were very dry and the clearing and preparation of the land for the new cotton crop were delayed in many areas.

*Anglo-Egyptian Sudan* : According to the latest official information, production of ginned cotton for the 1932-33 season is estimated at about 576,200 centals (120,500 bales of 478 lb. net weight), as against 1,007,200 (210,700 bales) in 1931-32 and an average of 592,600 (124,000) for the five seasons ending 1930-31. Percentages : 57.2 % and 97.2 %

*Union of South Africa* : production of ginned cotton in the Union and in Swaziland is now estimated at 9,000 centals (1,900 bales), a decrease on the previous estimate, 32.3 % below the 1931-32 production and 79.3 % below the average of the five years ending 1930-31.

## FLAX

*Belgium* : The low temperatures of the latter half of June and the almost daily rains and at times local storms caused laying of the weaker plants. Generally there are very few good fields.

*Bulgaria* : On an area of 1,500 acres, which is 148.5 % of that of 1932 and 167.6 % of the 1927-31 average, a production of 6,000 centals (10,600 bushels) of seed, 97.1 % of that of 1932 and 159.3 % of the average, and a production of 4,200 centals of fibre, 256.8 % of that of 1932 and 219.7 % of the average, are expected.

*Hungary* : Toward 5 July flowering had already ended. In places the crop was sparse and little developed.

*Yugoslavia* : The weather conditions in June were in general favourable for the growth of flax.

*U. S. S. R.* : On 1 July hoeing had been carried out on 2,513,000 acres destined for flax for fibre (*dolgunets*), that is, 47.5 % of the area sown.

*Argentina* (Telegram of 20 July) : Weather has not been favourable, the excessive cold and frosts having caused serious losses. Partial resowing appears necessary and good rains are consequently needed.

*United States* : In North Dakota flax was mostly in flower at the beginning of July. Prospects were, in general, poor.

## Area and Crop Condition of Flax.

COUNTRIES	AREA SOWN					CROP CONDITION †)														
	1933	1932	Average 1927 to 1931	% 1933		1-VII-1933									1-VI-1933			1-VII-1932		
				1932 = 100	Aver = 100															
1,000 acres																				
					a)	b)	c)	a)	b)	c)	a)	b)	c)	a)	b)	c)				
Austria . . . . .	...	8	10	...	170.0	2.7	—	—	2.6	—	—	2.6	—	—	—	—	—	—	—	
Bulgaria . . . . .	1	1	1	150.0	170.0	110	—	—	110	—	—	150	—	—	—	—	—	—	—	
Finland . . . . .	10	10	10	102.3	97.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
France 1) . . . . .	28	25	71	111.1	39.7	70	—	—	—	—	—	70	—	—	—	—	—	—	—	
Italy . . . . .	20	22	32	90.2	61.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Lithuania . . . . .	...	99	200	...	...	—	100	—	—	—	—	—	—	—	—	—	—	97	—	
Netherlands . . . . .	12	5	33	235.7	34.9	—	—	2) 60	—	—	—	2) 66	—	—	—	—	—	—	—	
Poland . . . . .	...	231	279	...	...	—	—	2.9	—	—	—	—	—	—	3.0	—	—	—	—	
Czechoslovakia . . . . .	17	16	40	103.9	42.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Yugoslavia . . . . .	...	29	33	...	...	2) e)	—	—	—	—	—	—	—	—	—	—	—	—	—	
Canada . . . . .	384	454	489	84.6	78.5	—	—	69	—	—	—	—	—	—	—	—	—	92	—	
United States . . . . .	1,755	2,087	2,915	84.1	60.2	—	—	53.4	—	—	—	—	—	—	—	—	—	76.4	—	
India . . . . .	3,239	3,301	2,123	98.1	103.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

†) For the explanation of signs and figures indicating crop conditions, see cereals table and note on page 431. —  
1) Areas sown to and crop conditions on 1 June. — 2) Middle of the previous month.



## HEMP

*Bulgaria* : The great increase in area and the favourable weather of June lead to expectations of an excellent crop. In fact, according to the first estimate, fibre production is estimated at 67,200 centals against 39,100 in 1932 and 30,300 in 1927-31, an increase respectively of 72.2 % and 121.7 % ; production of seed is estimated at 63,900 centals against 42,700 and 23,500, an increase respectively of 49.7 % and 172.3 %.

*France* : Area this year is 6,300 acres, a decrease of 15.0 % on that of last year (7,400 acres) and a decrease of 41.0 % on the average of the five years ending 1927-31 (10,700 acres).

Crop condition on 1 June was considered fairly good and estimated at 63 against 65 at the same date last year.

*Hungary* : Thanks to the rains hemp has continued to ameliorate. In general the crop was fairly high and well tillered toward 5 July.

*Italy* : The area under hemp in 1933 is estimated at 146,000 acres against 134,000 in 1932, an increase of 8.9 %, and 203,000 in 1927-31 a decrease of 28 %.

*Poland* : On 15 June condition of hemp was 3.1 against 3.3 on the corresponding date of 1932.

*Yugoslavia* : Abundant rainfall in June was favourable for the growth of hemp. No damage by adverse weather or insects is reported. Toward the middle of the month of June, the crop condition of hemp varied from good to very good.

## HOPS

*Great Britain* : In England and Wales in many southeastern hop gardens the bines were inclined to be somewhat weak and uneven. Yields in this district are anticipated to be rather below average. In the West Midlands the bines were usually strong and healthy and yields are expected to be slightly above the average. More rain was needed at the end of June.

*Hungary* : On 5 July crop condition was satisfactory.

*Czechoslovakia* : The crop is making good progress but is heavily infested with aphids.

*Yugoslavia* : The damp, cold weather in June was very favourable to the growth of hops the crop condition of which at mid-June varied from bad to good.

*United States* : The area under hops is estimated at 27,000 acres against 22,000 in 1932 and 23,000 on the average for the period 1927-1931 ; percentages : 122.9 and 116.4 . Production is calculated at 32,596,000 lb. against 24,120,000 in 1932 and 29,331,000 on the average ; percentages : 135.1 and 111.1.

## TOBACCO

*Bulgaria* : The more favourable weather in the latter half of June improved crop condition and allowed transplanting to be carried out under good conditions. Thanks to the increase in area a production above the very poor one of last year is expected, being estimated at 424,400 centals against 312,000 centals in 1932 and 567,200 in 1927-31, an increase of 36.0 % with respect to the former figure and a decrease of 25.2 % with respect to the latter.

*Greece* : According to the last estimate of the Ministry of National Economy the area harvested in 1932 was 156,600 acres, 75.1 % of that in 1931 and 68.2 % of the 1926-31 average. Due to this decline in unit-yield production was only 645,000 centals 67.7 % of that obtained in 1931 and 46.0 % of the average.

*Hungary* : Due to the generally cold weather development on 5 July was backward. Higher temperatures were needed.

*Czechoslovakia* : Crop condition on 1 July in Slovakia was good.

*Yugoslavia* : The weather conditions have favoured the growth of tobacco, the crop condition of which in mid-June varied from good to very good.

*United States* : The tobacco area is estimated at 1,740,000 acres against 1,433,000 in 1932 and an average of 1,907,000 for the period 1927-1931 ; percentages : 121.4 and 91.2. The latest estimate of production is 1,000,245,000 lb. compared with 1,033,330,000 last year and 1,474,688,000 on the average ; percentages : 96.8 and 67.8.

*India* : The crop has been affected by tela in Hoshiapur and Jowar and by grasshoppers in Rajapurtahsil and Dera Ghazi Khan.

*Japan* (Telegram of 20 July) : Production of tobacco this year will be about 146.6 millions pounds against 138.2 in 1932 and 145.6 on the average of the five years ending 1931. Percentages: 106.1 and 100.7.

*Algeria* : The rains at the end of May and in the first half of June were very beneficial and crop condition on 1 July remained the same as a month previously, being reckoned as average (100), while on 1 July 1932 it was 110.

The estimate of cultivated area has slightly increased ; it is now 49,000 acres, a decrease of about 17 % on that of last year and of about 19 % on the average.

## OTHER PRODUCTS

### Cacao.

*Brazil* : Up to the end of June the crop was coming down in larger quantities than at the corresponding period of last year. This may be partly due to the improvement in the price of cacao. The following figures show the entries by rail in the

Ilheos and Rio de Contas zones for June and for the first two months of the season, with the corresponding figures for last season.

	June 1933	May-June 1933	June 1932	May-June 1932
Ilheos zone (1000 lb.) . . .	7,242	7,653	3,135	3,280
Rio de Contas zone (1000 lb.)	1,356	1,441	701	701

Prospects for the main crop are considered to be normal. The weather in June was dry especially during the first part of the month, precipitation at Ilheos for the whole month having been 60 millimetres ( $2\frac{3}{8}$  inches) against the average of 169 millimetres (6.65 inches).

According to the Bolsa das Mercadorias in Bahia the entries of the 1932-33 crop at Ilheos were 139 million pounds, of which 124 million or 89 % were carried by the railway; the corresponding figures for 1931-32 were 125 million and 113 million pounds, the latter figure being 91 % of the total for Ilheos. The production of the Rio de Contas valley in 1932-33 was 39 million pounds, of which 15 millions or 40 % was carried by the railway to Ilheos; the corresponding figures for 1931-32 were 33 million and 6 million pounds, the latter figure being 17 % of the total for Rio de Contas.

*Trinidad*: Picking was expected to be completed by the end of June and production was forecast to be larger than that of 1932. Prices remain low. The problem of controlling witchbroom with the setting in of the wet season is a grave one due to the financial burden involved.

From Tobago it was reported in the earlier part of May that the young pods for the autumn crop were already showing.

The hurricane of 27 June resulted in severe damage along the south coast over a belt five miles wide. The cacao districts of Cedros, Erin, Palo Seco, Siparia, Moruga and Guayaguayare were affected, the trees having the appearance of having been burnt and all shade trees having been destroyed. In Erin and Siparia, both moderately good cacao areas, in the southwest, the industry is described as having been wiped out for a number of years.

## Tea.

*India*: Weather throughout the tea districts of Northern India in May varied considerably but prospects improved where good rain had fallen; in South India the monsoon set in and crop prospects were not very good. Production up to the end of May showed a decrease of  $2\frac{1}{2}$  million pounds in North India and an increase of 2.48 % in South India with respect to that up to the same date last year.

*Japan*: On 1 July condition of tea was rather poor due to unfavourable weather.

## Coffee.

*Kenya*: The unprecedented drought which has resulted from the failure of the long rains severely affected the development of the crop, which had given promise of being a record one of about 38 million pounds. Not only has development of the

early crop, harvested between June and September, been prevented but, unless rain is experienced in coming weeks, the prospect of a crop toward the end of the year and early in 1934 from later flowering will largely disappear. The crop is now expected to attain only 18 million pounds at the maximum.

### **Colza, sesame and mustard.**

*Austria* : At the beginning of July ripening was in progress. Crop condition was 2.3 as at the beginning of June, against 3.0 on 1 July 1932. In isolated cases harvesting had begun.

*Bulgaria* : Despite the decrease in area a very abundant crop of sesame is expected, 84,000 centals (4,200 bushels) against 59,700 (3,000) in 1932 and 43,500 (2,200) in 1927-31, an increase respectively of 40.3 % and 92.1 %. For colza production is expected to be 40,800 centals (81,600 bushels), more than double that of 1932 but only 13.6 % of the 1927-31 average. This increase in production is especially due to the extension of area in relation to 1932, though the latter remains very much below the areas harvested in favourable years.

*Hungary* : Given the lack of uniformity in the ripening of colza harvesting was in progress in 5 July in some areas and had already been terminated in others. According to the first estimate the area harvested this year is 19,200 acres against 32,800 in 1932 and 23,800 in 1927-31 (58.5 % ; 80.4 %). Production amounts to 143,000 centals (287,000 bushels) against 237,000 (473,000) and 180,000 (359,000), a decrease of 39.4 % and 21.3 % respectively.

*Netherlands* : The area cultivated to rapeseed this year will be about 3,700 acres against 3,500 in 1932 and 5,500 on the average of the five years ending 1931 ; percentages 106.6 and 67.3. The corresponding production is estimated at about 65,500 centals (131,000 bushels) against 61,700 (123,500) and 113,000 (226,000) ; percentages 106.1 and 58.0.

The area cultivated to mustard this year will be about 7,700 acres, against 3,400 in 1932 and 5,500 on the average. Percentages 226.1 and 140.7.

*Japan* : Area under colza this year is about 200,000 acres, 98 % of that cultivated in 1932 and 112 % of the quinquennial average.

*Palestine* : Sesame, sown in very small areas only, is very poor.

### **Groundnuts**

*United States* : The total area under groundnuts is estimated at 1,643,000 acres against 2,421,000 in 1932 and 1,945,000 on the average for 1927-1931 ; percentages 67.9 and 84.5. Crop condition on 1 July was 67.6 compared with 74.9 on 1 July 1932.

*French West Africa* : The last crop in Senegal, which supplied about four-fifths of the total of French West Africa, appears to have been a good average ; judging by the information from the various centres of production and the sales made in the first month of the year ; it should thus approach fairly near 11 million centals unshelled nuts against the 4 million of 1931, the 1926-30 average of 10,783,000 and the 1923-27 average of 10,035,000 centals.

It is in any case to be expected that the quantities exported will not be proportionally so large as in previous years, prices, which declined further at the end of the first quarter, having caused the natives to hold larger stocks than usual and to convert their nuts into oil for their own consumption or for local sale.

Exports in the first four months of this year were in fact scarcely 40 % of those in the first quarter of 1932, though the crop is 150 % above that of 1931.

*Egypt*: Germination and growth are satisfactory. Hoeing of the main crop and of early and late crops is proceeding. Crop condition on 1 July was 100, as on 1 July 1932.

## Jute.

*India*: The preliminary estimate of area sown to jute this year is 2,480,000 acres, an increase of 15.7 % on the revised preliminary estimate of last year, which was 2,143,000 acres, and a decrease of 18.6 % on the average of the corresponding estimates for 1927-31 which is 3,048,000 acres.

## Sericulture.

*Bulgaria*: During June the weather conditions were not too favourable and hindered silkworm rearing. The quantity of silkworm eggs incubated this year nearly equals that of cocoons last year. Consequently production of cocoons this year is forecast to be about the same as last year, namely, 2,866,000 lbs., representing only 66.6 % of the average production obtained during 1927-1931.

*Japan*: At the beginning of July condition of mulberries was average. Production of spring cocoons this year will be about 397,330,000 lb. against 383,441,000 in 1932 and 421,892,000 on the average of the five years ending 1931. Percentages: 103.6 and 94.2.

*Persia*: According to the reports received by the Ministry of Agriculture from Gilan and Mazandaran, the production of cocoons in these two principal silk-producing provinces is quite satisfactory, considerably exceeding that of preceding years.

*Egypt*: Progress of silkworms in June was excellent in Lower Egypt and medium in Upper Egypt. The quantity of eggs for hatching in 1933 was 861 ounces and the production of fresh cocoons is estimated at 108,000 pounds. This year is the first time these data have been published.

## SUPPLEMENTARY FIGURES

*Uruguay*: The following are the figures for wheat, oats and flax in the past year, which have been received very late.

	1932-33	1931-32	Average 1926-27 1930-31	% 1932-33 1931-32 = 100	Average 1932-33 = 100
Wheat. } (000 cent.) . . .	3,147	6,756	7,016	46.6	44.8
} (000 bush.) . . .	5,244	11,259	11,693		
Oats. . } (000 cent.) . . .	248	996	801	24.9	30.9
} (000 bush.) . . .	774	3,111	2,504		
Linseed } (000 cent.) . . .	836	2,711	1,593	30.8	52.5
} (000 bush.) . . .	1,493	4,841	2,845		

*Poland:* The supplementary data for 1932, compared with those of 1931 and the average of 1926-30, are as follows.

COUNTRIES	AREA						PRODUCTION							
	1932	1931	Aver. 1926 to 1930	% 1932		1932	1931	Aver. 1926 to 1930	1932	1931	Aver. 1926 to 1930	% 1932		
				1931	Aver- age							1931	Aver- age	
1,000 acres			= 100	= 100	1,000 centals			thousand bushels			= 100	= 100		
Maize . . . . .	240	243	222	98.7	108.1	2,331	2,296	1,968	4,163	4,099	3,515	101.6	118.4	
Mixtures of barley and oats . . . . .	340	353	354	96.3	96.1 1)	4,178	4,876	4,816	7,203	8,406	8,304	85.7	86.7	
Other cereals mix- tures . . . . .	229	202 2)	199	113.6	115.0	2,523	2,464 1)	2,637	4,350	4,249 1)	4,547	102.4	1195.7	
thousand short tons														
Sugar-beet . . . . .	287	367	517	78.1	55.5	52,439	60,875	96,718	2,621	3,044	4,836	86.1	54.2	
thousand pounds														
Hemp:														
Seed . . . . .	79	76	76	103.0	103.9	313	471	456	31,264	47,102	45,597	66.4	68.6	
Fibre . . . . .						223	318	446	22,274	31,773	44,585	70.1	50.0	
thousand bushels														
Linseed . . . . .	231	252	283	91.8	81.7	919	1,087	1,477	1,641	1,941	2,637	84.5	62.2	
Colza . . . . .	81	106	62	76.6	131.1	517	963	543	1,035	1,926	1,086	53.7	95.3	
thousand pounds														
Tobacco . . . . .	13	13	10	97.0	131.8	189	179	125	18,922	17,936	12,541	105.5	150.9	
Hops . . . . .	5	— 2)	6	—	277.6	34	— 2)	35	3,436	— 2)	3,504	— 2)	98.1	

1) Average 1928 to 1930. — 2) Average 1926 to 1929.

## FODDER CROPS

In June weather in the majority of European countries was very variable. There was abundant precipitation and temperatures below normal, save in Latvia, Finland and the Scandinavian countries, where hot dry weather prevailed, and in the British Isles and Belgium, where the weather was rather dry only in the first half of the month, more or less abundant rains having subsequently fallen. On the whole, therefore, weather in the majority of European countries favoured fodder crops and especially mangolds, turnips and temporary meadows. In fact, except for Latvia, Finland, Denmark and part of Italy, where it varied on 1 July from below average and bad to average, condition of these crops was above average. A similar situation held good for permanent meadows, while pasture, especially on the mountains, was in less favourable condition.

Hay production may be considered satisfactory though in a number of countries frequent rains hindered haymaking and had an unfavourable influence especially on quality.

*The Condition of Fodder Crops.*

CROPS AND COUNTRIES	CROP CONDITION †)								
	1 July 1933			1 June 1933			1 July 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
<b>CLOVER:</b>									
Germany . . . . .	2.7	—	—	2.8	—	—	2.6	—	—
Austria 1) . . . . .	2.2	—	—	2.3	—	—	2.8	—	—
Estonia . . . . .	—	—	—	109	—	—	—	—	92
Italy . . . . .	—	f)	—	—	—	—	—	f)	—
Latvia . . . . .	—	—	90	—	100	—	2) 110	—	—
Lithuania:									
annual . . . . .	3.5	—	—	3.6	—	—	3.6	—	—
biennial . . . . .	—	—	2.6	—	—	2.7	—	—	2.7
Netherlands:									
red clover . . . . .	2) 61	—	—	2) 61	—	—	2) 69	—	—
white clover . . . . .	2) 70	—	—	2) 70	—	—	2) 70	—	—
Poland . . . . .	2) 3.1	—	—	2) 3.2	—	—	—	—	—
Canada 3) . . . . .	—	—	88	—	—	93	—	—	86
Egypt (bersim) . . . . .	—	—	99	—	100	—	101	—	—
<b>ALFALFA:</b>									
Germany . . . . .	2.8	—	—	2.9	—	—	2.6	—	—
Austria . . . . .	2.3	—	—	2.3	—	—	2.9	—	—
Italy . . . . .	—	f)	—	—	—	—	—	f)	—
Canada 4) . . . . .	—	—	94	—	—	98	—	—	97
<b>MANGOLDS:</b>									
Germany . . . . .	2.7	—	—	2.9	—	—	2.8	—	—
Austria . . . . .	2.5	—	—	2.6	—	—	2.7	—	—
Bulgaria . . . . .	130	—	—	130	—	—	130	—	—
Finland 4) . . . . .	—	—	g)	—	—	—	—	—	—
France . . . . .	68	—	—	—	—	—	66	—	—
Italy . . . . .	—	f)	—	—	—	—	—	f)	—
Lithuania . . . . .	3.1	—	—	—	—	—	3.1	—	—
Canada 4) . . . . .	—	—	91	—	—	—	—	—	92
<b>TEMPORARY MEADOWS:</b>									
Austria 5) . . . . .	2.2	—	—	2.6	—	—	2.7	—	—
Bulgaria . . . . .	110	—	—	110	—	—	110	—	—
Denmark . . . . .	—	—	74	—	—	—	—	—	99
Scotland . . . . .	105	—	—	—	100	—	—	—	95
Finland . . . . .	—	—	f) g)	—	—	—	—	f)	—
France:									
annual green fodder crops . . . . .	65	—	—	—	—	—	70	—	—
artificially meadows 6) . . . . .	63	—	—	—	—	—	71	—	—
Switzerland . . . . .	3.7	—	—	3.9	—	—	4.1	—	—
<b>PERMANENT MEADOWS:</b>									
Germany:									
irrigated meadows . . . . .	2.7	—	—	2.7	—	—	2.5	—	—
other meadows . . . . .	—	3.0	—	—	3.0	—	2.6	—	—
Austria . . . . .	2.5	—	—	2.5	—	—	2.6	—	—
Bulgaria . . . . .	125	—	—	125	—	—	130	—	—
Denmark . . . . .	—	—	88	—	—	—	—	—	94
Finland . . . . .	—	—	g)	—	—	—	—	—	f) g)
France:									
pastures . . . . .	62	—	—	—	—	—	67	—	—
meadows . . . . .	62	—	—	—	—	—	68	—	—
Italy . . . . .	—	f)	—	—	—	—	—	f)	—
Latvia . . . . .	—	—	70	—	100	—	—	2) 100	—
Lithuania . . . . .	—	3.0	—	—	—	2.8	3.1	—	—
Netherlands 7) . . . . .	2) 59	—	—	2) 59	—	—	2) 74	—	—
Poland:									
ordinary meadows . . . . .	—	—	2) 2.5	—	—	2) 2.7	—	—	2) 2.7
low meadows . . . . .	—	—	2) 2.6	—	—	2) 2.6	—	—	2) 2.9
meadows improved . . . . .	2) 3.1	—	—	2) 3.0	—	—	2) 3.4	—	—
Switzerland . . . . .	3.5	—	—	3.6	—	—	4.2	—	—
<b>PASTURES:</b>									
Austria . . . . .	—	—	3.4	—	—	3.3	—	3.0	—
Denmark . . . . .	—	—	74	—	—	—	—	—	90
Scotland . . . . .	110	—	—	110	—	—	—	100	—
Italy . . . . .	—	f)	—	—	—	—	—	f)	—
Netherlands . . . . .	2) 60	—	—	2) 60	—	—	2) 74	—	—
Poland:									
permanent pastures . . . . .	—	—	2) 2.5	—	—	2) 2.4	—	—	2) 2.7
temporary pastures . . . . .	—	—	2) 2.9	—	—	2) 2.8	—	2) 3.0	—
Switzerland . . . . .	—	—	2.6	3.4	—	—	3.3	—	—
Canada . . . . .	—	—	89	—	—	93	—	—	81
United States . . . . .	—	—	60.5	—	—	—	—	—	79.0

a) Above the average. — b) Average. — c) Below the average. — d) excellent. — e) good. — f) average. — g) bad  
 †) See explanation of the various systems on page 431. — 1) Red clover. — 2) At the middle of the preceding month. —  
 3) Clover and hay. — 4) Turnips. — 5) Klee gras. — 6) Graminaceous and mixed graminaceous and leguminous crops. —  
 7) Meadows for hay.

In Africa dry weather prevailed in French Morocco and Tunisia in June. In the Union of South Africa, save in a few districts, the continued drought in May and the intense cold in June severely reduced pasturage and still further aggravated a situation already critical due to the uninterrupted drought of the preceding months.

In Canada and the United States the continued drought was unfavourable to fodder crops, of which the condition on 1 July was below average. The estimate of fodder production in the United States indicates rather unsatisfactory yields, particularly on permanent meadows.

Condition of pastures in Canada and the United States at the beginning of July was also below average.

In Argentina pastures have given poor yields, due to the scarcity of rains and to the frosts.

*Germany* : Haymaking in the clover and other meadows was to a great extent hindered by the rainy weather and both quantity and quality of the hay was frequently lowered by the crop having to remain standing too long.

*Austria* : At the beginning of July fodder beet were growing well.

The first cutting of temporary meadows (red clover, alfalfa and mixed clover) was effected under good conditions; in the eastern regions haymaking was hindered by rainy weather. The growth of grass after the first cutting has been strong everywhere. Hay production from meadows capable of three cuttings was well advanced at the beginning of July, particularly in the eastern regions. Haymaking has been constantly checked by rain. In places the quality of hay is bad owing to excessive moisture.

Pastures have a good stand. Owing to frequent rains the soil has been so softened that grazing by livestock has destroyed much feed.

*Belgium*: Yield of hay scarcely attained the average due to unfavourable weather in the latter half of June.

*Bulgaria* : The very damp weather during June was not in general very favourable to the quality and yield of fodder crops. For vetches and fodder millet a fairly abundant crop is forecast.

The preliminary estimates of production this year are as follows.

	1933	1932	% of 1933 (1932 = 100)
Permanent meadows (ooo centals) . . .	19,136	20,768	92.1
(ooo sh. tons) . . .	957	1,038	
Temporary meadows (ooo centals) . . .	3,148	3,638	86.5
(ooo sh. tons) . . .	157	182	
Vetches (ooo centals) . . .	10,166	8,543	119.0
(ooo sh. tons) . . .	508	427	
Mangolds (ooo centals) . . .	882	992	88.9
(ooo sh. tons) . . .	44	50	
Podder millet (ooo centals) . . .	1,036	774	133.9
(ooo sh. tons) . . .	52	39	



*Estonia* : In the spring, the weather conditions were unfavourable to the growth of fodder crops ; until the end of May temperatures were low and, though in June the weather was warm, drought hindered growth. Owing to these unfavourable circumstances, the condition of green fodder crops is bad.

*Irish Free State* : During June the weather was variable with alternate rains and heat and was generally favourable to growth. Pastures were all well covered with excellent herbage all through the month. First crop hay was saved in good condition and the yield was about average.

Fodder supplies were ample to meet requirements.

Milk yields showed the usual seasonal increase.

*Finland* : In the following table are given the area and production of the principal fodder crops in 1933, 1932 and the average of 1927-31 :

Crops	Area				
	1933	1932	Average 1927 to 1931	% 1933 1932 = 100	% 1933 Average = 100
	(000 acres)				
Permanent meadows . . . . .	1,075	1,075	1,185	100.0	90.7
Temporary meadows . . . . .	2,528	2,518	2,600	100.4	97.2
Fodder turnips . . . . .	43	47	52	91.1	81.8
Other root and tuber crops for fodder . . . . .	65	61	68	106.8	95.2
Pastures . . . . .	1,236	1,236	1,463	100.0	84.5

Production					
Permanent meadows (000 centals) .	5,953	8,984	9,870	66.3	60.3
(000 sh. tons) .	298	449	493		
Temporary meadows (000 centals) .	56,465	65,963	56,531	85.6	99.9
(000 sh. tons) .	2,823	3,298	2,826		
Fodder turnips (000 centals) .	7,099	11,861	12,188	59.9	58.2
(000 sh. tons) .	355	593	609		

*France* : In the following table is indicated the area of fodder crops, estimated on 1 June.

	1933	1932	Average 1927 to 1931	% 1933 1932 = 100	% 1933 Average = 100
	(000 acres)				
Mangolds . . . . .	1,852	1,851	1,812	100.1	102.2
Annual fodder crops for hay . . . . .	1,687	1,714	1,806	98.5	93.4
Leguminous crops . . . . .	7,253	7,198	7,139	100.8	101.6
Gramineous and mixed leguminous crops	1,236	1,174	1,118	105.2	110.5
Grass . . . . .	4,532	4,695	4,645	96.5	97.6
Permanent meadows . . . . .	13,529	13,362	13,255	101.2	102.1
<i>Total</i> . . . . .	<u>30,089</u>	<u>29,994</u>	<u>29,775</u>	<u>100.3</u>	<u>101.1</u>

The rains in June in all regions improved condition of fodder crops and meadows; in the stockrearing regions of the Centre they ended a persistent drought which was causing anxiety.

*Great Britain and Northern Ireland* : In England and Wales the first half of June was warm and dry followed by some local thunder showers but more rain was needed at the end of the month. Owing to the favourable weather conditions, haymaking was commenced somewhat earlier than usual. Little damage was done to the hay already cut and good progress was made during the fine intervals. The hay crop is light but of good quality.

The present forecast for seeds hay is about 25 cwt. (1.4 short tons) per acre or  $3\frac{3}{4}$  cwt. (0.2 short tons) below the average of the ten years 1923-32; meadow hay:  $17\frac{3}{4}$  cwt. (1.0 short tons) per acre or 3 cwt. (0.2 short tons) per acre below the ten year average. Pastures needed rain. Mangolds were satisfactory. Turnips and swedes germinated well and were satisfactory. Dry weather and fly necessitated some resowing.

In Scotland the dry bright fodder conditions during July were almost ideal for hay-making. The crop may be rather light in some areas but the quality of the hay will be very good.

In Northern Ireland, the growth of mangolds and turnips improved toward the end of the month. Some resowing of turnips was necessary; late sown turnips made slow growth and needed more rain. Hay yields are expected to be as good as last year on the average and in many districts there are excellent crops of good hay. Cutting commenced during the second week of June. Pastures were in good condition.

*Hungary* : Mangolds were growing well. They are luxuriant and healthy. Toward 5 July the first cutting of clover and alfalfa had already been finished. Yields were satisfactory as regards quantity whereas quality suffered owing to rain. Maize for green fodder has, however, not grown well. Hay yields from the first cutting of permanent meadows have been partly good and partly average. Quality has suffered owing to the rain. Growth of the grass after the first cutting was satisfactory. Pasture grass is adequate.

*Italy* : Crops benefited from the rains in the first half of June. The first cut of meadows promises good yields. Haymaking has everywhere, however, been hindered by bad weather.

*Latvia* : According to the reports of agricultural correspondents condition of temporary meadows was average in 44.7 % cases, above average in 15.7 % and below average in 39.6 %. The corresponding figures for permanent meadows were 52.8 %, 6.7 % and 40.5 %.

*Lithuania* : In June crops developed in average weather conditions.

*Netherlands* : The areas under fodder plants this year, compared with those of last year and with the five-year average are as follows :

	1933	1932	Average 1927-31	% 1933 = 100	Average = 100
	(000 acres)				
Mangolds . . . . .	110	109	101	101.2	108.5
Fodder carrots . . . . .	4	4	5	88.7	75.1
Kohl-rabi and turnips . . . . .	29	29	31	101.0	93.7
Clover . . . . .	70	76	78	92.0	89.5
Other fodder plants . . . . .	16	14	17	111.2	92.5
Temporary meadows . . . . .	64	47	39	138.0	164.9

Growth of meadows, which was rather poor, somewhat improved toward the end of the month.

*Poland* : In comparison with the estimate of 5 June the crop condition of meadows and pastures on 15 June improved slightly as a result of warmer weather and abundant rains during the first ten days of June. Only the departments of Stanislawów, Wilno and Polesie report that excessive moisture has, in places, contributed to the deterioration of the condition of meadows in low lying regions.

*Switzerland* : The deleterious effect of the bad weather in June was particularly apparent in the first cut of meadow grass. Hay-making commenced at the beginning of June in advantageous conditions and large supplies of good feed were laid in in the favoured districts. Due to stormy weather harvesting was very backward and unusually difficult. In many districts the hay remained standing too long and lost its feed value. Rarely has the condition of both permanent and temporary meadows been so unfavourably affected as this season. Pastures particularly suffered from storms and late frosts.

*Czechoslovakia* : Thanks to the rains condition of temporary meadows considerably improved. Mowing began toward the middle of June but was hindered by the frequent rains and the cool weather. Condition of permanent meadows was less satisfactory.

*Yugoslavia* : Frequent and abundant rains in June have caused floods which have damaged the meadows and pastures.

Their crop condition at the middle of June was considered to be good.

*Argentina* (Telegram of 20 July) : Pastures have suffered from scarcity of rains and from frosts and available supplies of fodder are rather small.

*Canada* : The preliminary estimates of area under fodder crops are as follows :

	1933	1932	Average 1927-31	% 1933 1932 = 100	Average = 100
	(000 acres)				
Turnips . . . . .	183	175	196	104.7	93.2
Hay and clover . . . .	8,807	8,812	10,052	99.9	87.6
Alfalfa . . . . .	653	666	773	98.0	84.5
Fodder maize . . . . .	365	366	420	99.8	87.0

Although this year's areas are below the average, they do not differ greatly from those of last year.

*United States* : Hay production this year is estimated as follows:—

	1933	1932	Average 1927-31	% 1933 1932 = 100	Average = 100
	Area (000 acres)				
Tame hay . . . . .	55,000	52,819	54,369	104.1	101.2
Wild hay . . . . .	14,000	14,298	13,419	97.9	104.3
	Production				
Tame hay (000 centals). .	1,320,000	1,392,180	1,443,872	94.8	91.4
(000 sh. tons) . . . . .	66,000	69,609	72,194		
Wild hay (000 centals). .	178,000	243,580	227,900	73.1	78.1
(000 sh. tons) . . . . .	8,900	12,179	11,395		

*Palestine* : Vetch and oats mixtures for hay have given promising results in a few places only; on the whole crops vary from 30 % to 70 % of the average. Bersim, which is all under irrigation, has given satisfactory yields.

*Egypt* : The area under bersim this year is 1,639,000 acres against 1,619,000 last year, an increase of 1.3 % and 1,548,000 in 1927-21, an increase of 5.9 %.

The last cutting of bersim was completed in June and cutting of crops for seed was begun. Yields are average.

*French Morocco* : June was in general a dry but not too warm month except in Meknès. Water supplies have shown normal variations for the season; though in several regions the water supply is normal or even larger and though the level of soil moisture is constant, it is in other regions decreasing; the wells and tanks are drying up in several places.

The lack of rains is leading to the progressive drying up of the grazing land; on the Taza side of the mountains, however, they are sufficiently supplied with vegetation and at Marrakesh, thanks to the May rains, they are not yet exhausted. The dry grass still serves to feed livestock but this source needs to be supplemented by feed from stubble land, which is fairly abundant at the moment.

## LIVESTOCK AND DERIVATIVES

### Number of pigs in Germany.

In the quarter from March to June 1933 the number of pigs underwent the increase usual for the time of year; the increase was, however, more marked than in the corresponding period of 1932 and 1931. The total according to the latest estimate is almost the same as in June 1932 but remains appreciably below that of June 1931.

The number of young pigs under eight weeks old at the beginning of June 1933 was relatively small. That of young pigs of eight weeks to six months increased from March but still remained below the beginning of 1932. On the other hand pigs for slaughter, especially young pigs, were more numerous than a year previously.

With regard to the further development of the pork supply it is important to note that the number of brood sows at the beginning of June had increased with reference not only to the March figure but to that of June 1932. The relation between the number of sows in farrow and that of a year previously has been again positive for the first time since March 1931 and amounts to 6.7 %.

*Numbers of pigs in Germany (1).*

CLASSIFICATION BY SEX AND AGE	7 June 1933	3 March 1933	1 Dec. 1932	1 Sept. 1932	1 June 1932	1 March 1932	1 Dec. 1931	1 Sept. 1931	1 June 1931	2 March 1931	1 Dec. 1930	1 Sept. 1930	2 June 1930
	(1000 head).												
<i>Totals . . . . .</i>	21,172	20,238	22,859	24,176	21,289	20,633	23,808	25,348	22,529	21,790	23,442	23,423	19,805
<i>Sucking pigs under 8 weeks of age . . . . .</i>	5,139	5,152	4,834	6,326	5,501	5,014	5,128	6,804	6,027	5,750	5,469	6,522	5,091
<i>Young pigs from 8 weeks to 6 months of age . . .</i>	9,752	9,379	9,884	10,341	9,832	9,976	10,484	10,980	10,351	10,231	10,035	9,809	9,178
<i>Pigs from 6 months to 1 year of age . . . . .</i>	4,449	3,966	5,812	5,435	4,109	3,853	5,782	5,391	4,172	3,939	5,484	5,125	3,842
Of which:													
Boars for service. . .	46	46	49	46	46	47	50	51	54	58	61	57	57
Sows for breeding (total)	652	528	485	517	608	549	494	569	693	706	674	812	876
Sows covered . . . . .	(422)	(316)	(259)	(255)	(374)	(323)	(251)	(276)	(409)	(425)	(369)	(442)	(574)
Other swine . . . . .	3,751	3,392	5,278	4,872	3,455	3,256	5,238	4,771	3,425	3,176	4,749	4,256	2,909
<i>Pigs 1 year old and over .</i>	1,832	1,741	2,329	2,075	1,847	1,791	2,414	2,173	1,979	1,870	2,455	1,967	1,694
Of which:													
Boars for service. . .	72	66	61	75	73	67	63	73	71	62	60	61	57
Sows for breeding (total)	1,511	1,381	1,384	1,559	1,534	1,425	1,459	1,661	1,663	1,517	1,503	1,467	1,356
Sows covered . . . . .	(978)	(832)	(851)	(832)	(938)	(875)	(870)	(902)	(1,021)	(927)	(942)	(861)	(915)
Other swine . . . . .	249	294	884	440	240	298	893	439	246	291	892	440	280

1) Present territory, excluding the Saar.

**The number of pigs in the Netherlands.**

The special organisation created by the pig crisis law has had another pig inventory compiled in March and April 1933. If the results are compared with those obtained at the time of the September-October inventory, a considerable decrease may be noted which is particularly very interesting in view of the fact that the number of sows for reproduction, which is generally larger in the spring than in the autumn, has decreased by 12 %. The total number of pigs is nearly 23 % lower. The results are as follows:

	Spring 1933	Autumn 1932
Boars for reproduction . . . . .	8,206	10,103
Sows " " . . . . .	234,776	264,794
Sucking pigs (under 6 weeks old) . . . . .	543,671	534,584
Pigs under 60 kg. . . . .	769,307	1,011,543
Pigs 60 to 100 kg. . . . .	367,311	624,142
Pigs over 100 kg. . . . .	189,275	289,818
Total (including unspecified pigs) . . .	2,112,546	2,735,733

# Livestock in Switzerland.

On 21 April 1933 a census of cattle and pigs was carried out.

## Cattle.

Classification	Absolute figures		Increase (+) or decrease (—) for 1933		Distribution in %	
	1931	1933	Absolute figures	%	1931	1933
Calves of 6 months and over:						
for slaughter . . . . .	56,995	61,879	+	8.6	3.5	3.7
for rearing . . . . .	225,271	184,512	—	18.1	14.0	11.0
Young cattle of 6 months to 1 year . . . . .	108,407	111,226	+	2.6	6.7	6.6
Heifers:						
of 1 to 2 years . . . . .	188,520	215,389	+	14.2	11.7	12.8
of over 2 years . . . . .	103,213	127,722	+	23.7	6.4	7.6
Cows: . . . . .	868,269	912,766	+	5.1	54.0	54.2
Bulls:						
of 1 to 2 years . . . . .	28,906	26,429	—	8.6	1.8	1.6
of over 2 years . . . . .	7,633	10,998	+	44.1	0.5	0.6
Oxen:						
of 1 to 2 years . . . . .	12,209	19,224	+	56.4	0.8	1.1
of over 2 years . . . . .	9,514	13,787	+	44.9	0.6	0.8
TOTAL . . .	1,609,018	1,683,932	+	4.7	100.0	100.0

The number of cattle has increased in all cantons since 1931. The total increase amounts to 75,000 or 4.7 %. If the various age and use categories are considered the changes appear more marked and sometimes even contrary to those recorded for the total of cattle. The number of dairy cows has thus increased as a whole and that of young cattle over one year old and that of animals for fattening have increased notably, while that of calves for rearing shows a heavy decline. The number of dairy cows, which is 913,000, has increased by 44,500 (5.1 %) since 1931. There is also an increase not previously rivalled in cattle for milk production and this tendency may be still further noted, given the increase in heifers, unless a great part of these are delivered for slaughter or sold abroad. Except in canton Lucerne the number of dairy cows has everywhere increased. This increase is especially pronounced in western Switzerland, the north-west and the cantons of Zurich, Schaffhausen, Grisons, Thurgovie and Ticino. The number of calves for slaughter (61,880) increased by 4,900 (8.6 %) on that in 1931. The great development of stock fattening finds expression in the increase of oxen from one to two years old (+ 56.4 %) and of oxen over two years (+ 44.9 %). In some cantons only this category is inferior in numbers to those recorded in 1931 and development remains below average in cantons Zurich and Ticino.

The decrease of 3 % in the number of pigs since 1931 may be considered as small. The change varies from one region to another. In some of the principal centres of pig rearing a number even higher than that of 1931 was recorded in 1933. The number of pigs is at present still well above the average, a fact

*Pigs.*

Classification	Absolute figures		Increase (+) or decrease (—) for 1933		Distribution in %	
	1931	1933	Absolute figures	%	1931	1933
Young pigs of 2 months and over . . . . .	246,988	236,890	— 10,098	— 4.1	26.7	26.4
Young pigs and pigs of 2 to 6 months . . . . .	349,104	328,432	— 20,672	— 5.9	37.7	36.6
Pigs of over 6 months for fattening . . . . .	237,197	247,028	+ 9,831	+ 4.1	25.6	27.5
Sows . . . . .	89,296	81,379	— 7,917	— 8.9	9.6	9.1
Boars . . . . .	3,521	3,720	+ 199	+ 5.7	0.4	0.4
TOTAL . . .	926,106	897,449	— 28,657	— 3.1	100.0	100.0

that will continue to influence unfavourably the marketing of other categories of stock for slaughter.

On the occasion of the cattle and pig census some cantons carried out an enumeration of sheep and goats. In canton Berne horses were also enumerated. The total of horses shows a slight regression in this canton with respect to that in 1931. On the other hand there has been an increase in the number of brood mares. The increase in sheep in canton St. Gall is particularly interesting. As regards goats there has been on the whole a further slight diminution in those cantons where an enumeration was made.

### Number of pigs in the United States.

The number of pigs saved in the spring season of 1933 is estimated at 51,030,000 head for the whole of the country or 3 % more than in 1932. About half the increase was due to an increase in the number of sows farrowing and the other half to an increase in the average number of pigs saved per litter. Spring farrowings in 1933 numbered 8,702,000 head (+ 1.4 %). The number of sows to farrow in the fall season of 1933 is estimated at 5,240,000 head (+ 8 %).

The number of hogs over 6 months of age on farms on 1 June was 15 % larger than last year.

### Current information on livestock and derivatives.

*Germany* : On the basis of the total number of milch cows (9,802,000) and milch goats (2,021,000) existing in Germany a production of 5,125 million Imperial gallons (6,155 million American gallons) of cow milk and of 242 (291) millions of goat milk will be obtained in 1932, a total of 5,367 (6,446) million gallons. The corresponding figures for 1931 were 5,037 (6,050) million, 242 (291) million and 5,279 (6,340) million gallons.

*Estonia* : Owing to the poor condition of green fodder, milk production has diminished.

*France* : The condition of stock, which was beginning to cause acute uncertainty, particularly in the Centre, recovered somewhat in consequence of the rains in June, which ended the persistent drought.

Stock for slaughter appear exceptionally numerous this year in the West. Animals on the La Villette market attained record figures, unseen since the end of 1929, on certain days in June. This is due to the fact that fattening has been further advanced this year due to the abnormal winter and that, owing to the drought, the bad condition of the grass, financial difficulties of rearers and other circumstances, the first animals, fattened on pasture, were put on the market much earlier than usual. In consequence the stock market situation was further aggravated in June.

Production of milk and of butter, which has decreased due to the persistent drought in some of the principal cattle-rearing regions, improved at the end of June. That of eggs decreased, as normally for the season.

*Great Britain and Northern Ireland* : In Scotland the grazing season is now at its height and the quantity of concentrated foods used for milch cattle is very small. Supplies are ample. At the beginning of June the yield was rather above the average for the season but production fell off somewhat towards the end of the month.

In Northern Ireland the condition of store and dairy cattle is good. Sheep are in good condition. Milk supplies are plentiful.

In most parts of the country the weather was generally favourable during the lambing season of 1933. Disease was less prevalent than in recent years. For England and Wales, losses of lambs were 8 % of total births (10 % in 1932), losses of ewes 4 % (5 %). The net lamb crop was about 8,900,000 and the number of ewes lost, 330,000.

*Netherlands* : Dairy production in June was normal.

*Switzerland* : The preliminary estimate of milk deliveries to the depôts in May gives, for 750 societies, an average increase of 15.6 % compared with those of last year.

The increase is 13.9 % for German Switzerland and 20 % for French Switzerland. The measures to restrict production taken by the different federations were not effective, during May as most of them were, in the preliminary stage and could not be applied until later. Compared with May 1931, the deliveries have increased by roughly 18 %.

*Argentina* (Telegram of 20 July) : Health of livestock is good.

*French West Africa* : The livestock situation was satisfactory in Senegal and Dahomey during the first half of this year, despite some cases of cattle pest, which were rapidly checked by vaccination, and of peripneumonia in Senegal. In the French Sudan, however, a fairly widespread epidemic of cattle pest appeared and caused some losses ; peripneumonia has also been noted in some herds.

*Union of South Africa* : In May the comparatively mild autumn conditions continued during the first three weeks but winter set in in earnest in the last week of the month with severe cold and frosts. Except for the southwestern districts of the Cape Province and the south coastal belt the severe drought continued without relief. The sharp frost definitely reduced the value of the grazing in the inland areas and livestock suffered accordingly.



In the inland areas the feeding and watering of stock during the remainder of the winter is a problem without solution for many farmers. It is many years since such wholesale trekking with stock has been necessary. Roads have at times been impassable owing to the masses of sheep and cattle on the move. Sheep from the evacuated northwestern districts of the Cape Province have largely sought refuge in the Karroo, which is already hard-pressed to provide the necessary grazing and water for local stock. Stock from the Orange Free State have trekked into the eastern Cape Province and the Natal highveld and those from the Transvaal have moved in large numbers to the lowveld. It is, however, impossible for the favoured areas to carry the entire stock of the Union and that there will be heavy mortality before the first summer rains seems inevitable. The position has been aggravated by the scarcity of drinking water in many areas where grazing is still plentiful, by the restrictions imposed consequent on outbreaks of foot-and-mouth disease and East Coast fever and by the absence of green feed due to the shortage of irrigation water. This season's lambs will have to be destroyed on a wholesale scale in order to save the ewes. The only area in the Union where a change for the better had been noted was the southwestern districts of the Cape Province, where the drought was broken toward the end of May by good general rains. Toward the end of June, however, a severe cold spell in the Cape Province and the Orange Free State worked havoc amongst the stock already emaciated by the prolonged drought.

*New Zealand* : In the first nine months of the 1932-33 season butter production reached a total of over 258 million pounds, an output no less than 22.4 % above that in the corresponding period of the 1931-32 season. Similar figures for cheese show an increase of 13.7 %. The total butterfat output shows an increase of 18.4 %.

## LATEST INFORMATION

*Netherlands* : Crop condition on 13 July, according to the Institute's system, was as follows : wheat 101 ; rye 103 ; barley 100 ; oats 106 ; flax 101 ; colza 100 ; potatoes 110 ; sugar-beet 112.

## TRADE

COUNTRIES	MAY				TEN MONTHS (August 1-May 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	293	212	0	0	1,556	5,326	0	0	5,688	0
Hungary . . . . .	216	375	0	0	2,458	7,284	2	0	7,912	0
Lithuania . . . . .	0	0	0	0	2	20	0	0	20	0
Poland . . . . .	194	209	0	9	487	1,248	483	342	1,598	346
Rumania . . . . .	0	311	0	2	24	20,913	9	7	21,200	9
U. S. S. R. . . . .	...	0	...	77	10,863	39,820	1,373	337	39,820	1,515
Yugoslavia . . . . .	0	148	0	0	503	8,175	0	0	8,796	0
Canada . . . . .	12,879	9,326	2	9	124,061	88,397	31	66	109,685	75
United States . . . . .	9	4,370	626	384	11,475	46,626	4,616	6,219	52,803	7,361
Argentina . . . . .	8,419	7,203	—	—	59,701	75,182	—	—	82,114	—
Chile . . . . .	...	...	...	...	7	7	697	...	9	0
Turkey . . . . .	4	130	0	0	132	882	0	0	913	0
Algeria . . . . .	...	...	...	...	4,500	3,075	858	1,131	4,837	1,462
Tunis . . . . .	134	104	0	20	2,745	2,178	337	375	5,337	401
Australia . . . . .	5,631	9,125	0	0	65,048	64,552	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	106	11	1,839	1,122	12,509	7,293	15,214	13,347	7,313	21,006
Austria . . . . .	0	0	787	302	0	0	5,390	5,273	0	6,418
Belgium . . . . .	163	157	2,690	3,005	1,706	3,208	22,295	25,439	3,587	31,478
Denmark . . . . .	0	0	403	525	15	9	5,544	7,586	9	8,719
Spain . . . . .	0	0	0	126	0	0	0	161	0	6,482
Estonia . . . . .	0	0	0	33	0	0	0	247	0	256
Irish Free State . . . . .	0	0	809	514	4	13	7,066	5,415	13	6,369
Finland . . . . .	0	0	86	49	0	0	754	335	0	428
France . . . . .	0	0	1,409	5,719	46	9	20,477	40,495	9	53,138
Gr. Brit. and N. Irel. . . . .	77	434	11,268	9,879	467	1,076	103,265	115,644	1,206	137,664
Greece . . . . .	0	0	1,063	1,332	0	0	9,815	12,024	0	14,116
Italy . . . . .	0	0	774	4,198	13	18	9,815	16,491	18	22,547
Latvia . . . . .	0	0	0	29	2	0	18	395	0	575
Norway . . . . .	0	0	445	97	0	0	2,831	2,886	0	3,294
Netherlands . . . . .	2	2	904	1,138	496	101	12,580	14,685	110	17,875
Portugal . . . . .	—	—	37	49	—	—	459	564	—	1,393
Sweden . . . . .	0	2	126	11	11	9	1,821	3,102	9	4,054
Switzerland . . . . .	0	4	791	911	13	13	9,718	10,776	18	12,683
Czechoslovakia . . . . .	0	0	1,153	1,008	2	4	3,541	11,111	4	13,199
India . . . . .	2	2	152	0	40	174	946	179	183	179
Japan . . . . .	—	—	1,127	1,537	—	—	10,042	13,651	—	17,070
Syria and Lebanon . . . . .	2	13	46	101	262	494	218	198	511	328
Egypt . . . . .	...	...	...	...	7	7	844	844	2	994
Union of South Africa . . . . .	...	...	...	...	0	4	152	888	2	1,034
New Zealand . . . . .	...	...	...	...	0	0	701	75	0	258
Totals . . . . .	28,131	32,138	26,537	32,303	299,155	376,110	250,870	310,288	427,517	392,726
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	2	4	0	0	66	985	0	0	990	0
Hungary . . . . .	315	179	0	0	1,113	1,296	0	0	1,486	0
Lithuania . . . . .	0	0	0	0	35	0	0	2	9	2
Poland . . . . .	562	75	0	0	5,216	2,143	216	123	2,513	123
Rumania . . . . .	0	49	0	0	9	1,649	0	0	1,678	0
U. S. S. R. . . . .	...	148	—	—	5,199	23,579	—	—	23,640	—
Canada . . . . .	15	948	0	0	1,484	3,053	0	0	5,066	0
United States . . . . .	0	126	—	—	20	315	—	—	622	—
Argentina . . . . .	487	403	—	—	1,722	4,971	—	—	5,097	—
Turkey . . . . .	22	11	0	0	284	639	0	0	690	0
Algeria . . . . .	...	...	...	...	11	11	0	0	29	0
<i>Importing Countries:</i>										
Germany . . . . .	2	15	750	2,321	2,974	2,041	6,581	8,369	2,046	12,103
Austria . . . . .	0	0	88	198	0	0	414	1,305	0	1,728
Belgium . . . . .	7	121	245	340	276	509	2,183	2,022	639	2,709
Denmark . . . . .	0	0	381	161	0	0	4,824	3,752	0	4,731
Estonia . . . . .	0	0	0	7	0	0	0	13	0	13
Finland . . . . .	0	0	190	163	0	0	924	633	0	1,202
France . . . . .	0	0	15	126	0	0	370	1,424	0	1,735
Italy . . . . .	0	0	13	11	0	0	245	128	0	157
Latvia . . . . .	0	0	0	7	0	0	0	93	0	99
Norway . . . . .	0	0	262	214	0	0	2,540	3,139	—	3,415
Netherlands . . . . .	2	40	300	251	66	322	3,477	3,161	331	4,193
Sweden . . . . .	0	4	9	24	13	20	262	957	26	1,334
Switzerland . . . . .	0	0	2	4	0	0	315	75	0	108
Czechoslovakia . . . . .	2	0	2	128	53	7	97	4,930	7	5,124
Totals . . . . .	1,416	2,123	2,257	3,955	18,541	41,540	22,448	30,126	44,867	38,776

1) See notes page 495.

COUNTRIES	MAY				TEN MONTHS (August 1-May 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	243	2	4	9	1,684	62	64	172	64	229
Belgium . . . . .	4	7	0	2	49	60	57	44	73	51
Bulgaria . . . . .	2	97	0	0	51	697	0	0	752	0
Spain . . . . .	2	0	0	0	7	15	0	0	18	0
France . . . . .	395	139	62	18	3,481	4,394	410	205	4,764	262
Hungary . . . . .	31	108	0	0	754	1,940	0	0	2,130	0
Italy . . . . .	243	157	24	15	3,109	1,925	238	245	2,235	287
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Lithuania . . . . .	2	2	0	0	20	22	0	0	26	0
Poland . . . . .	9	13	0	0	214	472	0	4	511	4
Rumania . . . . .	0	7	0	0	13	853	0	0	855	0
Yugoslavia . . . . .	2	11	0	0	51	84	0	0	104	0
Canada . . . . .	1,107	906	15	4	8,494	8,558	40	35	10,551	40
United States . . . . .	631	646	0	0	7,122	13,576	2	0	15,091	0
Argentina . . . . .	112	106	—	—	882	1,371	—	—	1,548	—
Chile . . . . .	—	—	—	—	—	—	—	—	—	—
India . . . . .	24	64	0	0	284	745	231	0	29	0
Turkey . . . . .	0	0	0	0	0	11	0	0	836	0
Japan . . . . .	666	403	2	9	5,697	2,641	11	101	3,470	106
Algeria . . . . .	—	—	—	—	346	86	57	49	157	57
Tunis . . . . .	20	18	4	0	143	115	44	18	146	20
Australia . . . . .	944	1,124	0	0	10,880	12,086	0	0	13,995	0
<i>Importing Countries:</i>										
Austria . . . . .	0	0	24	93	0	7	483	992	7	1,261
Denmark . . . . .	2	2	60	86	13	11	631	1,144	13	1,290
Estonia . . . . .	0	0	0	0	0	9	0	15	9	15
Irish Free State . . . . .	0	2	207	337	0	24	1,579	3,344	26	4,048
Finland . . . . .	0	0	101	106	0	0	1,003	1,347	0	1,590
Gr. Brit. and N. Irel. . . . .	377	520	988	1,003	3,673	4,672	7,509	9,639	5,628	11,224
Greece . . . . .	0	0	0	4	0	0	18	62	0	66
Norway . . . . .	0	0	101	22	4	9	930	1,162	11	1,358
Netherlands . . . . .	0	4	62	62	18	68	743	646	71	723
Portugal . . . . .	—	—	11	15	—	—	201	128	—	201
Sweden . . . . .	0	0	0	2	0	0	7	31	0	37
Czechoslovakia . . . . .	0	0	9	86	7	7	313	970	9	1,182
Ceylon . . . . .	—	—	26	29	—	—	320	359	—	401
Java and Madura . . . . .	—	—	—	—	—	—	767	877	—	1,144
Indo-China . . . . .	—	—	29	37	—	—	289	346	—	388
Syria and Lebanon . . . . .	4	2	84	51	82	90	699	344	93	397
Egypt . . . . .	—	—	—	—	2	2	185	2,064	0	2,430
Union of South Africa . . . . .	—	—	—	—	2	2	7	13	2	15
New Zealand . . . . .	—	—	—	—	2	2	185	172	4	238
Totals . . . . .	4,820	4,340	1,813	1,990	47,158	54,629	17,025	24,532	63,239	29,068
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	4	2	0	0	110	401	0	0	406	0
Spain . . . . .	4	0	0	0	49	9	0	0	15	0
Hungary . . . . .	126	2	0	0	1,299	51	0	7	55	7
Lithuania . . . . .	0	0	0	0	2	0	0	0	0	0
Poland . . . . .	95	97	0	0	3,400	3,104	0	0	3,146	0
Rumania . . . . .	549	455	0	0	9,760	14,745	0	0	15,913	0
Czechoslovakia . . . . .	64	366	0	0	3,468	1,777	2	2	2,112	2
U. S. S. R. . . . .	—	—	—	—	7,665	17,783	—	—	17,789	—
Canada . . . . .	60	822	—	0	2,388	5,199	0	0	6,499	0
United States . . . . .	161	311	—	0	3,598	1,922	—	—	2,524	—
Argentina . . . . .	922	243	—	—	6,909	6,338	—	—	6,418	—
Chile . . . . .	—	—	—	—	97	428	0	0	492	0
India . . . . .	0	33	0	0	4	408	0	0	666	0
Syria and Lebanon . . . . .	0	7	18	13	31	377	331	93	384	104
Turkey . . . . .	42	187	0	0	802	2,813	0	0	2,996	0
Egypt . . . . .	—	—	—	—	79	0	0	271	2	273
Tunis . . . . .	174	68	—	—	2,566	196	35	551	820	556
Australia . . . . .	203	95	0	0	1,241	1,523	0	0	1,614	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	408	988	4	18	2,952	13,946	18	15,970
Austria . . . . .	0	0	161	123	0	0	1,572	1,881	0	2,075
Belgium . . . . .	64	121	624	536	1,232	1,453	8,250	8,459	1,676	9,396
Denmark . . . . .	73	11	170	238	417	450	1,792	2,676	474	3,331
Irish Free State . . . . .	0	0	2	7	2	26	68	311	26	483
France . . . . .	0	0	311	791	4	15	6,881	8,157	15	9,482
Gr. Brit. and N. Irel. . . . .	4	0	873	540	40	9	11,786	12,754	31	14,039
Greece . . . . .	0	0	9	11	0	0	20	168	0	172
Italy . . . . .	0	0	60	93	0	0	880	758	0	800
Latvia . . . . .	0	0	0	0	0	0	0	4	0	4
Norway . . . . .	0	0	2	79	0	0	90	780	0	794
Netherlands . . . . .	9	20	582	397	101	260	7,427	7,890	262	9,112
Switzerland . . . . .	0	0	53	214	0	0	4,096	2,635	2	2,989
Yugoslavia . . . . .	11	0	0	0	37	13	4	37	13	37
Algeria . . . . .	—	—	—	—	75	595	1,852	2,141	620	2,520
Totals . . . . .	2,565	2,840	3,273	4,030	45,400	59,913	48,038	63,521	64,988	72,146

1) See notes page 495.

COUNTRIES	MAY				TEN MONTHS (August 1-May 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	9	7	0	7	33	71	9	212	73	218
Hungary . . . . .	62	0	0	0	335	4	0	2	7	2
Lithuania . . . . .	0	0	0	0	0	13	0	0	20	0
Poland . . . . .	22	11	0	0	187	46	0	0	62	0
Rumania . . . . .	2	7	0	0	626	236	0	0	293	0
Czechoslovakia . . .	159	108	0	0	2,831	631	0	55	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	311	551	0	20	3,318	4,032	683	556	4,628	635
United States . . . .	22	33	0	7	1,166	705	4	18	895	22
Argentina . . . . .	558	1,594	—	—	9,231	14,853	—	—	16,486	—
Chile . . . . .	...	...	...	...	159	196	0	0	223	0
Algeria . . . . .	...	...	...	...	121	271	31	368	295	384
Tunis . . . . .	2	0	0	0	93	141	0	0	212	0
Australia . . . . .	2	13	0	0	86	79	2	2	108	2
<i>Importing Countries:</i>										
Germany . . . . .	37	0	42	9	174	9	386	201	9	223
Austria . . . . .	0	0	9	119	0	0	536	1,228	0	1,464
Belgium . . . . .	0	7	104	150	7	26	739	1,140	37	1,504
Denmark . . . . .	0	0	86	49	64	66	309	421	66	500
Estonia . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	0	22	0	2	20	68	40	20	55
France . . . . .	0	0	24	467	4	7	1,049	2,196	7	3,214
Gr. Brit. and N. Irel.	2	2	529	939	22	201	5,150	6,986	203	8,494
Italy . . . . .	0	0	212	256	0	0	2,341	3,327	0	4,074
Latvia . . . . .	11	0	0	0	11	0	0	7	0	7
Norway . . . . .	0	0	0	37	0	2	13	273	2	273
Netherlands . . . . .	2	0	260	126	24	42	2,308	1,953	44	2,383
Sweden . . . . .	0	49	106	29	46	121	522	946	181	1,105
Switzerland . . . . .	0	0	348	516	0	0	4,374	4,297	2	5,033
Totals . . . . .	1,201	2,382	1,742	2,731	18,540	21,772	18,524	24,235	24,759	29,676
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>					SEVEN MONTHS (November 1-May 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
Bulgaria . . . . .	465	276	0	0	2,216	2,097	0	0	2,890	0
Rumania . . . . .	2,811	2,211	0	0	26,605	22,983	0	0	34,421	2
Yugoslavia . . . . .	1,396	134	0	0	7,200	1,453	0	0	1,825	26
United States . . . .	368	141	4	18	2,624	999	60	159	3,084	220
Argentina . . . . .	11,938	14,908	—	—	54,706	104,691	—	—	175,846	—
Brazil . . . . .	...	...	—	—	0	0	—	—	—	—
Java and Madura . . .	...	...	—	—	1,248	1,993	—	—	2,467	—
Indo-China . . . . .	309	110	—	—	2,264	1,382	—	—	3,459	—
Syria and Lebanon . .	0	0	82	13	4	7	183	24	7	37
Turkey . . . . .	46	31	0	0	143	172	0	0	373	0
Egypt . . . . .	...	...	...	...	154	7	4	31	15	46
Union of South Africa	4	33	0	0	3,510	1,625	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	216	1,986	0	0	4,594	10,095	0	17,007
Austria . . . . .	0	0	800	635	0	0	6,605	4,434	0	7,628
Belgium . . . . .	93	66	1,585	1,612	575	904	10,141	11,087	1,385	18,691
Denmark . . . . .	0	0	1,486	1,967	0	0	8,889	12,716	0	21,231
Spain . . . . .	0	0	101	403	0	0	1,239	3,907	0	6,931
Irish Free State . . .	0	0	661	1,005	0	0	3,516	7,264	0	13,658
Finland . . . . .	0	0	90	35	0	0	542	276	0	582
France . . . . .	0	2	955	1,594	2	22	11,305	13,435	26	25,869
Gr. Brit. and N. Irel.	150	260	3,774	4,158	961	1,715	31,925	37,435	3,208	64,058
Greece . . . . .	0	0	108	132	0	0	388	3,186	0	3,382
Hungary . . . . .	802	2	0	2	2,191	62	0	247	93	939
Italy . . . . .	0	0	84	2,370	2	4	1,076	9,599	7	15,737
Norway . . . . .	0	0	362	269	0	0	1,916	2,339	0	4,092
Netherlands . . . . .	11	18	1,956	2,269	64	154	20,607	23,609	223	36,892
Poland . . . . .	0	0	11	4	0	0	42	62	0	126
Portugal . . . . .	—	—	139	126	—	—	617	675	—	1,407
Sweden . . . . .	0	0	357	346	0	0	2,725	3,415	0	6,135
Switzerland . . . . .	0	0	108	214	0	0	1,281	2,092	2	3,717
Czechoslovakia . . .	0	0	306	650	0	0	1,113	7,557	0	9,958
Canada . . . . .	0	0	256	256	20	7	3,045	2,568	13	3,891
Japan . . . . .	—	—	20	236	—	—	37	1,508	—	1,695
Tunis . . . . .	0	0	0	7	0	0	0	322	0	324
Totals . . . . .	18,393	18,192	13,461	20,307	104,509	140,277	111,850	158,066	234,337	264,281

x) See notes page 495.

COUNTRIES	MAY				FIVE MONTHS (January 1-May 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	11	84	0	0	57	408	0	0	871	0
Italy . . . . .	571	218	15	2	1,733	1,579	60	22	3,505	55
United States . . . . .	71	317	22	11	741	1,299	132	112	2,586	190
Brazil . . . . .	...	...	—	—	1) 42	256	—	—	615	—
India . . . . .	5,148	5,366	—	196	21,625	28,219	231	295	48,001	683
Indo-China . . . . .	2,868	2,811	—	—	14,359	12,097	—	—	26,983	—
Siam . . . . .	2,875	2,787	—	—	16,065	14,026	—	—	34,106	—
Egypt . . . . .	...	...	...	...	1) 668	1) 95	1) 2	1) 633	1,032	710
<i>Importing Countries:</i>										
Germany . . . . .	130	121	758	679	353	419	2,899	2,782	1,047	8,481
Austria . . . . .	0	0	53	49	0	0	243	201	0	549
Belgium . . . . .	4	13	49	97	29	104	456	474	201	1,208
Denmark . . . . .	0	0	15	9	0	0	71	44	0	139
Estonia . . . . .	—	—	0	2	—	—	7	9	—	15
Irish Free State . . . . .	0	0	7	9	0	0	29	22	2	46
France . . . . .	77	86	1,722	789	494	359	5,503	2,976	864	8,329
Gr. Brit. and N. Irel. . . . .	11	15	357	243	51	99	1,085	1,230	163	2,747
Greece . . . . .	—	—	35	84	—	—	196	271	—	540
Hungary . . . . .	0	0	62	44	0	0	183	165	0	465
Latvia . . . . .	0	0	7	0	0	0	11	4	0	18
Lithuania . . . . .	0	0	2	2	0	0	4	7	0	20
Norway . . . . .	0	0	15	9	0	0	42	26	0	71
Netherlands . . . . .	108	117	276	247	527	681	1,856	1,226	1,863	2,639
Poland . . . . .	26	57	331	159	—	157	582	342	317	1,027
Portugal . . . . .	—	—	86	79	—	—	300	448	—	875
Sweden . . . . .	—	—	4	90	—	—	7	90	—	90
Switzerland . . . . .	0	0	37	37	0	0	342	172	0	432
Czechoslovakia . . . . .	0	0	141	119	0	0	353	397	0	1,096
Yugoslavia . . . . .	0	0	46	42	0	2	225	218	2	494
Canada . . . . .	2	7	112	123	2	9	269	340	9	593
Chile . . . . .	—	—	...	...	—	—	1) 51	1) 117	—	187
Ceylon . . . . .	0	0	963	756	2	2	4,220	4,632	4	10,386
Java and Madura . . . . .	...	...	...	...	1) 2	1) 13	1) 2,244	1) 1,916	73	3,303
Japan . . . . .	26	26	247	373	231	51	1,358	1,448	1,054	3,369
Syria and Lebanon . . . . .	0	0	46	31	0	0	176	159	0	392
Turkey . . . . .	0	0	0	9	0	0	20	31	0	92
Algeria . . . . .	...	...	...	...	1) 13	1) 2	1) 110	1) 77	9	198
Tunis . . . . .	0	0	2	2	0	0	15	24	0	40
Union of South Africa . . . . .	...	...	...	...	1) 0	1) 0	1) 326	1) 364	0	895
Australia . . . . .	33	7	2	2	55	44	20	29	86	49
New Zealand . . . . .	...	...	...	...	1) 0	1) 0	1) 22	1) 20	0	64
<b>Totals . . .</b>	<b>11,961</b>	<b>12,032</b>	<b>5,432</b>	<b>4,294</b>	<b>57,093</b>	<b>59,921</b>	<b>23,650</b>	<b>21,323</b>	<b>123,373</b>	<b>50,488</b>
<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	2	0	0	2	15	0	2	4
Lithuania . . . . .	11	2	0	0	44	95	0	0	170	0
Argentina . . . . .	1,953	2,599	—	—	15,514	19,092	—	—	44,403	—
India . . . . .	333	137	0	0	906	750	0	0	1,728	0
Tunis . . . . .	0	0	0	0	2	4	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	966	807	9	7	4,416	3,697	20	9,841
Belgium . . . . .	2	7	172	205	35	108	1,695	1,579	139	3,673
Denmark . . . . .	—	—	44	24	—	—	212	198	—	534
Spain . . . . .	—	—	35	86	—	—	128	198	—	494
Finland . . . . .	0	0	15	7	0	0	49	26	0	75
France . . . . .	0	0	586	672	2	4	2,791	2,282	7	5,049
Gr. Brit. and N. Irel. . . . .	0	0	326	529	4	2	2,478	3,459	4	8,294
Greece . . . . .	0	0	0	9	0	0	26	26	0	88
Hungary . . . . .	0	2	13	0	0	7	31	0	9	29
Italy . . . . .	0	0	163	148	0	0	694	582	0	1,512
Latvia . . . . .	0	0	22	0	31	18	51	31	53	75
Norway . . . . .	0	0	35	24	0	0	159	168	0	403
Netherlands . . . . .	2	2	1,358	1,226	29	66	4,583	4,694	75	9,912
Poland . . . . .	0	0	18	24	0	2	214	57	4	271
Sweden . . . . .	—	—	121	79	—	—	445	454	—	957
Czechoslovakia . . . . .	0	0	26	97	2	2	170	238	2	798
Yugoslavia . . . . .	0	0	18	13	0	0	51	24	0	115
Canada . . . . .	123	0	0	143	130	2	0	176	205	256
United States . . . . .	—	—	452	463	—	—	1,510	2,771	—	4,502
Japan . . . . .	—	—	53	7	—	—	181	108	—	148
Australia . . . . .	0	0	146	2	0	0	214	205	0	450
<b>Totals . . .</b>	<b>2,423</b>	<b>2,749</b>	<b>4,571</b>	<b>4,565</b>	<b>16,708</b>	<b>20,161</b>	<b>20,113</b>	<b>20,973</b>	<b>46,845</b>	<b>47,480</b>

1) See notes page 495.

COUNTRIES	MAY				FIVE MONTHS (January 1-May 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	13	2	55	545	379	240	146	690	1,565	802
Denmark . . . . .	30,627	31,852	183	115	136,359	146,231	450	692	347,886	922
Estonia . . . . .	1,706	2,837	0	0	4,740	8,056	0	0	27,626	0
Irish Free State . . . . .	5,756	3,023	0	33	9,315	3,993	2	2,255	36,932	2,632
Finland . . . . .	2,476	2,734	0	0	11,579	16,200	0	0	32,020	0
Hungary . . . . .	461	174	0	0	2,780	1,305	0	0	4,495	0
Latvia . . . . .	3,034	2,743	0	0	11,557	12,013	0	0	41,002	2
Lithuania . . . . .	1,607	1,336	0	0	4,892	4,248	0	0	21,883	0
Norway . . . . .	20	97	2	2	661	1,759	7	18	2,421	90
Netherlands . . . . .	8,922	4,147	46	243	28,457	16,105	580	7,807	44,926	9,323
Poland . . . . .	26	49	0	90	150	1,548	0	99	2,707	866
Sweden . . . . .	1,997	1,808	7	2	11,563	12,531	20	13	29,875	33
U. S. S. R. . . . .	—	—	—	—	2,231	3,373	—	—	68,198	—
Argentina . . . . .	1,356	3,208	—	—	18,510	29,998	—	—	55,925	—
India . . . . .	18	18	62	31	95	123	196	183	260	428
Syria and Lebanon . . . . .	0	31	110	179	55	161	487	769	315	1,867
Australia . . . . .	7,945	14,906	0	0	96,516	91,832	0	0	229,105	0
New Zealand . . . . .	10,851	11,363	—	—	118,353	98,988	—	—	244,787	—
<i>Importing Countries:</i>										
Germany . . . . .	2	11	13,329	12,383	7	139	46,447	66,941	478	153,264
Belgium . . . . .	84	212	1,775	2,840	163	955	15,252	27,258	1,841	46,760
Spain . . . . .	7	2	2	2	15	20	4	24	44	42
France . . . . .	593	538	134	1,810	2,533	2,696	15,754	14,129	7,921	26,140
Gr. Brit. and N. Irel. . . . .	1,219	1,814	85,895	77,881	4,780	27,983	418,064	379,613	35,693	946,298
Greece . . . . .	—	—	77	97	—	—	247	694	—	1,197
Italy . . . . .	119	143	77	284	562	481	1,360	3,067	827	3,816
Switzerland . . . . .	0	0	245	725	2	2	780	6,230	7	8,151
Czechoslovakia . . . . .	0	0	130	514	0	26	214	1,314	26	2,703
Canada . . . . .	33	121	95	18	152	602	1,358	181	3,505	238
United States . . . . .	97	90	132	79	459	595	560	595	1,607	1,014
Ceylon . . . . .	—	—	75	40	—	—	269	240	—	602
Java and Madura . . . . .	—	—	—	—	—	—	3,212	3,153	—	8,766
Japan . . . . .	—	—	49	15	—	—	152	66	—	163
Algeria . . . . .	—	—	—	—	11	20	1,336	1,415	35	3,955
Egypt . . . . .	—	—	—	—	117	231	293	276	384	825
Tunis . . . . .	0	0	165	119	4	2	765	527	4	1,305
Totals . . . . .	78,970	83,259	102,645	98,047	466,997	482,456	507,955	518,249	1,244,300	1,222,204
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	101	37	0	0	858	331	0	2	2,601	4
Denmark . . . . .	2,705	974	2	7	9,235	4,334	37	71	14,535	130
Finland . . . . .	670	428	0	2	3,139	2,740	9	9	7,225	26
Italy . . . . .	5,613	5,869	930	825	22,280	27,979	3,459	3,190	66,370	8,805
Lithuania . . . . .	75	82	0	0	452	683	2	2	1,768	7
Norway . . . . .	298	243	11	22	1,548	1,318	77	108	3,644	240
Netherlands . . . . .	11,164	13,887	55	84	56,119	63,930	309	448	170,061	1,076
Poland . . . . .	4	57	53	71	88	474	201	229	767	586
Switzerland . . . . .	4,504	3,494	262	465	18,208	15,506	1,334	2,238	43,700	4,755
Czechoslovakia . . . . .	192	423	216	258	1,140	3,217	1,058	1,063	6,124	3,071
Yugoslavia . . . . .	88	64	4	13	655	633	31	79	2,617	150
Canada . . . . .	1,541	1,517	66	119	2,939	4,244	287	430	86,940	1,166
Australia . . . . .	328	97	7	2	5,840	2,866	26	4	8,801	60
New Zealand . . . . .	18,832	15,543	0	0	108,305	91,084	2	0	192,175	2
<i>Importing Countries:</i>										
Germany . . . . .	322	381	6,400	7,901	1,967	1,755	35,603	37,962	4,237	108,688
Austria . . . . .	443	289	293	463	1,795	761	1,030	2,000	3,982	3,732
Belgium . . . . .	35	51	4,154	3,609	159	251	17,939	16,790	551	45,660
Spain . . . . .	33	26	154	112	562	97	703	703	238	2,480
Irish Free State . . . . .	0	0	57	119	0	22	223	836	37	2,019
France . . . . .	2,050	2,105	4,987	3,823	11,343	13,184	21,888	19,273	29,211	52,133
Gr. Brit. and N. Irel. . . . .	620	562	21,367	26,731	2,637	2,974	139,083	136,971	7,242	336,733
Greece . . . . .	174	9	146	68	406	20	578	1,076	620	1,753
Hungary . . . . .	7	2	0	0	18	22	11	11	33	11
Portugal . . . . .	—	—	31	44	—	—	130	163	—	608
Sweden . . . . .	—	—	75	64	—	—	351	362	—	1,045
United States . . . . .	79	146	5,527	4,339	534	659	18,925	21,696	1,534	55,643
India . . . . .	—	0	90	66	0	2	399	359	2	950
Java and Madura . . . . .	—	—	—	—	—	—	485	395	—	1,642
Syria and Lebanon . . . . .	0	7	95	82	9	20	844	403	68	1,195
Algeria . . . . .	—	—	—	—	53	62	3,851	2,956	159	10,033
Egypt . . . . .	—	—	—	—	75	110	1,715	1,415	254	5,260
Tunis . . . . .	13	2	192	174	22	2	1,043	875	13	2,191
Totals . . . . .	49,891	46,295	45,174	49,463	250,386	240,280	251,633	252,514	655,509	651,854

COUNTRIES	MAY				TEN MONTHS (August 1-May 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . . .	3,265	2,703	44	112	38,546	42,404	522	483	46,787	620
Argentina . . . . .	53	75	—	—	414	381	—	—	593	—
Brazil . . . . .	—	—	—	—	2	179	—	—	183	—
India . . . . .	928	542	99	485	8,525	6,186	745	1,933	7,075	2,249
Egypt . . . . .	—	—	—	—	4,680	6,257	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . . . .	97	128	752	622	1,080	1,411	7,522	7,377	1,640	8,327
Austria . . . . .	0	0	33	44	0	0	342	489	0	553
Belgium . . . . .	31	22	143	84	231	298	1,592	1,191	348	1,349
Denmark . . . . .	—	—	22	15	—	—	128	110	—	134
Spain . . . . .	0	2	231	192	13	20	1,607	1,711	22	2,048
Estonia . . . . .	0	0	7	0	0	0	49	62	0	75
Finland . . . . .	0	0	24	13	0	0	148	134	0	159
France . . . . .	37	44	401	399	302	448	6,083	3,411	494	4,286
Gr. Brit. and N. Irel.	42	26	952	996	406	348	10,296	10,842	485	12,452
Greece . . . . .	0	0	26	15	0	0	159	174	0	192
Hungary . . . . .	0	0	40	13	0	0	340	302	0	333
Italy . . . . .	0	0	176	359	0	0	3,446	3,486	0	4,037
Latvia . . . . .	0	0	3	4	0	0	73	44	0	51
Norway . . . . .	0	0	12	4	0	0	49	40	0	44
Netherlands . . . .	2	0	53	42	7	7	639	70	7	858
Poland . . . . .	0	0	51	88	15	20	955	871	22	1,074
Portugal . . . . .	—	—	55	55	—	—	395	348	—	434
Sweden . . . . .	—	—	44	33	—	—	478	443	—	564
Switzerland . . . .	0	0	117	141	2	4	478	443	4	505
Czechoslovakia . .	9	9	18	20	88	117	1,534	1,746	137	2,002
Yugoslavia . . . .	0	0	82	126	0	0	152	181	0	201
Canada . . . . .	—	—	1,444	1,914	373	1,041	8,426	14,866	1,041	16,484
Japan . . . . .	71	243	—	—	4	2	4	4	4	7
Algeria . . . . .	—	—	—	—	—	—	—	—	—	—
<b>Totals . . . . .</b>	<b>4,535</b>	<b>3,794</b>	<b>4,946</b>	<b>5,816</b>	<b>54,688</b>	<b>59,123</b>	<b>46,957</b>	<b>52,378</b>	<b>66,342</b>	<b>60,012</b>

**Wool. — (Thousand lb.).**

COUNTRIES					NINE MONTHS (September 1-May 31)				TWELVE MONTHS (Sept. 1-August 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<i>Exporting Countries:</i>										
Irish Free State . .	893	269	95	84	9,024	7,399	571	615	9,949	948
Hungary . . . . .	101	13	79	49	1,951	1,228	1,272	966	2,344	1,285
Argentina . . . . .	34,207	22,963	—	—	249,059	210,284	—	—	254,013	—
Chile . . . . .	1,270	575	—	—	11,808	6,036	—	—	8,177	—
India . . . . .	3,693	1,991	1,389	496	14,134	23,949	6,415	3,695	25,175	5,020
Syria and Lebanon .	331	276	37	115	32,064	29,465	988	622	35,402	985
Algeria . . . . .	—	—	—	—	2,604	2,795	1,175	862	3,935	1,252
Egypt . . . . .	—	—	—	—	4,597	4,195	33	2	6,856	—
Un. of S. Africa . .	23,063	27,185	—	0	1,938	1,016	0	0	1,413	4
Australia . . . . .	675	489	—	82	243,038	268,672	459	1,111	298,046	1,261
New Zealand . . . .	50,180	38,321	35	82	4,835	3,874	459	1,111	5,296	1,261
— (a) . . . . .	9,760	4,581	0	4	790,377	703,414	4,134	1,894	762,756	2,008
— (b) . . . . .	18,129	16,409	0	0	56,811	43,980	24	11	58,535	15
— (c) . . . . .	2,853	3,565	0	0	209,546	173,736	9	12	177,836	29
— (d) . . . . .	—	—	—	—	38,943	33,662	9	15	43,314	2
<i>Importing Countries:</i>										
Germany . . . . .	542	121	31,079	25,686	2,676	8,968	249,048	186,935	9,780	241,314
Austria . . . . .	719	514	3,159	2,086	6,488	7,721	27,915	23,676	9,681	31,656
Belgium . . . . .	18	0	1,784	818	86	57	13,404	11,039	82	13,982
Denmark . . . . .	8,638	3,045	16,923	12,558	73,165	10,075	155,757	86,869	18,715	116,938
Spain . . . . .	2,280	2,017	291	231	15,992	17,289	2,943	2,326	22,465	3,036
Finland . . . . .	7	4	337	317	172	141	3,966	3,342	157	4,409
France . . . . .	101	64	1,063	1,761	1,731	1,967	7,780	6,704	2,321	12,377
Gr. Brit. and N. Irel.	0	2	315	306	51	84	2,903	2,035	86	2,762
Greece . . . . .	3,426	2,560	46,092	49,626	28,294	35,091	442,893	300,253	45,631	399,116
Italy . . . . .	28,792	36,079	112,948	116,667	309,168	237,606	802,179	735,800	315,628	888,010
Netherlands . . . .	121	0	661	137	558	77	2,138	1,770	300	2,094
Poland . . . . .	22	33	19,674	21,171	311	1,008	127,659	111,111	1,232	145,274
Sweden . . . . .	439	68	1,537	1,038	2,868	1,252	11,636	11,601	1,620	14,290
Switzerland . . . .	82	46	227	240	644	578	1,684	1,819	756	2,355
Czechoslovakia . .	236	146	452	481	1,942	1,490	6,784	5,622	1,933	7,229
Yugoslavia . . . .	97	152	430	511	836	553	6,539	5,661	761	8,148
Canada . . . . .	101	68	3,812	2,046	1,140	1,477	27,203	20,402	1,687	27,084
United States . . .	—	—	1,398	1,213	—	—	13,649	14,319	—	17,745
Japan . . . . .	26	9	1,133	3,100	203	373	15,999	15,693	397	20,150
Tunis . . . . .	139	97	2,194	2,458	1,021	1,664	22,875	24,555	1,892	32,038
— (a) . . . . .	0	0	247	181	132	93	2,454	2,293	152	2,937
— (b) . . . . .	101	26	1,025	110	2,908	4,061	7,139	4,991	5,159	6,277
— (c) . . . . .	55	1,235	3,179	2,833	450	1,969	40,226	78,342	3,893	82,779
— (d) . . . . .	14	40	25,732	28,312	60	77	189,605	165,546	172	192,901
— (e) . . . . .	23	15	33	66	245	97	432	333	77	520
<b>Totals . . . . .</b>	<b>191,279</b>	<b>162,978</b>	<b>277,360</b>	<b>274,962</b>	<b>2,121,870</b>	<b>1,847,473</b>	<b>2,199,890</b>	<b>1,833,032</b>	<b>2,137,624</b>	<b>2,282,230</b>

Wool, greasy; b) = Wool, scoured. — 1) See notes page 495.

COUNTRIES	MAY		ELEVEN MONTHS (July 1-May 31)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	MAY		ELEVEN MONTHS (July 1-May 31)		TWELVE MONTHS (July 1-June 30)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1,267,045	1,740,114	2,021,602	Ceylon . . . . .	24,557	28,307	220,728	219,612	245,982
India . . . . .	3,137	745	17,783	16,045	17,926	India . . . . .	7,370	6,770	352,699	321,404	342,950
Java and Madura .	...	...	75,654	42,746	51,725	Java and Madura .	...	...	134,934	135,269	163,312
						Japan . . . . .	1,598	492	26,471	21,832	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	29	66	1,133	1,550	1,649	Belgium . . . . .	2	0	9	20	22
Belgium . . . . .	24	258	388	9,548	9,645	Irish Free State .	2	4	29	258	258
France . . . . .	0	0	62	15	15	France . . . . .	2	2	15	35	35
Netherlands . . . .	948	1,292	15,119	13,307	14,709	Gr. Brit. and N. Irel.	8,453	1,272	78,306	76,064	80,092
Portugal . . . . .	154	126	1,872	1,149	1,270	Netherlands . . . .	7	11	119	134	141
Switzerland . . . . .	18	11	295	597	613	United States . . .	15	15	284	461	474
Canada . . . . .	7	2	46	40	42	Syria and Lebanon	0	11	2	18	20
United States . . . .	1,281	961	11,288	21,385	22,593	Algeria . . . . .	...	...	31	1	44
Ceylon . . . . .	0	0	7	11	11	Union of S. Africa .	...	...	15	1	117
Syria and Lebanon .	2	4	11	44	46	Australia . . . . .	57	26	699	503	549
Australia . . . . .	0	7	37	51	55	New Zealand . . . .	...	...	88	1	73
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>2,141,901</b>	<b>Totals . . . . .</b>	<b>42,063</b>	<b>36,910</b>	<b>814,429</b>	<b>775,844</b>	<b>858,743</b>
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	22,090	18,106	256,758	285,152	307,608	Germany . . . . .	635	736	9,332	9,850	10,494
Austria . . . . .	1,023	1,484	12,322	15,587	17,406	Austria . . . . .	24	86	858	1,038	1,138
Belgium . . . . .	6,217	4,065	88,401	110,130	114,694	Belgium . . . . .	46	40	562	624	661
Bulgaria . . . . .	152	105	820	1,537	1,658	Denmark . . . . .	97	112	1,175	1,232	1,380
Denmark . . . . .	5,112	5,057	44,251	61,681	66,439	Spain . . . . .	11	29	258	262	280
Spain . . . . .	4,279	2,930	39,542	46,553	50,224	Estonia . . . . .	7	13	64	172	172
Estonia . . . . .	9	37	77	289	298	Irish Free State .	2,136	1,759	21,528	23,993	25,122
Irish Free State . .	75	29	531	483	522	Finland . . . . .	22	13	203	238	249
Finland . . . . .	3,408	2,736	30,609	29,436	32,481	France . . . . .	249	249	2,952	3,131	3,419
France . . . . .	29,083	32,115	391,007	392,358	427,557	Gr. Britain and N. Ireland . . . . .	33,896	31,625	542,246	516,721	550,364
Gr. Britain and N. Ireland . . . . .	3,080	2,868	32,781	33,790	36,648	Greece . . . . .	29	112	344	697	699
Greece . . . . .	589	1,351	7,438	12,496	13,010	Hungary . . . . .	9	24	531	540	562
Hungary . . . . .	179	437	5,271	5,547	6,041	Italy . . . . .	26	24	430	300	333
Italy . . . . .	7,670	7,624	77,213	85,425	93,366	Latvia . . . . .	7	9	112	119	128
Latvia . . . . .	35	22	322	351	375	Lithuania . . . . .	15	11	119	115	119
Lithuania . . . . .	29	7	331	423	445	Norway . . . . .	26	29	362	366	386
Norway . . . . .	3,276	2,663	33,433	35,340	38,189	Netherlands . . . .	1,841	2,694	27,895	27,994	30,836
Netherlands . . . .	6,457	6,861	89,607	95,674	103,379	Poland . . . . .	324	198	3,560	4,008	4,317
Poland . . . . .	1,204	972	13,883	15,946	17,185	Portugal . . . . .	33	46	388	624	648
Portugal . . . . .	1,142	855	10,252	10,192	10,657	Sweden . . . . .	77	55	814	805	858
Sweden . . . . .	11,702	7,941	93,188	101,499	107,586	Switzerland . . . .	121	137	2,022	1,636	1,792
Switzerland . . . . .	2,231	3,616	34,901	31,412	34,286	Czechoslovakia . .	29	93	1,307	1,669	1,737
Czechoslovakia . .	1,958	3,192	23,832	30,404	32,386	Yugoslavia . . . .	13	29	397	600	622
Yugoslavia . . . . .	1,493	1,263	12,939	16,294	17,434	Canada . . . . .	1,202	873	37,159	37,926	39,031
Canada . . . . .	2,745	4,092	27,959	29,363	31,963	United States . . .	7,295	4,566	88,963	83,182	90,460
United States . . . .	156,747	139,416	1,329,467	1,486,611	1,629,014	Chile . . . . .	...	...	3,422	4,689	5,170
Chile . . . . .	...	...	3,746	8,710	9,308	Syria and Lebanon	7	101	190	571	586
Ceylon . . . . .	143	46	2,341	3,369	3,572	Turkey . . . . .	209	146	2,134	1,389	1,504
Japan . . . . .	388	990	3,887	5,487	6,724	Algeria . . . . .	...	...	3,530	2,132	2,522
Syria and Lebanon .	295	146	2,026	2,185	2,324	Egypt . . . . .	...	...	14,595	11,810	13,999
Turkey . . . . .	498	871	10,141	7,714	8,841	Tunis . . . . .	231	276	2,454	6,426	6,669
Algeria . . . . .	...	...	26,389	25,898	30,532	Union of S. Africa .	...	...	10,223	10,798	12,683
Egypt . . . . .	...	...	13,038	13,658	15,858	Australia . . . . .	3,329	3,627	44,375	40,922	44,899
Tunis . . . . .	322	256	3,252	2,943	3,190	New Zealand . . . .	...	...	11,643	8,673	10,421
Un. of S. Africa . .	...	...	23,292	22,158	26,026						
Australia . . . . .	556	558	3,078	2,939	3,510						
New Zealand . . . .	...	...	273	359	452						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	0	110	60	106	India . . . . .	185	423	5,362	6,281	6,486
						Java and Madura .	...	...	4,425	8,973	9,771
<b>Totals . . . . .</b>	<b>274,187</b>	<b>252,791</b>	<b>2,748,708</b>	<b>3,029,653</b>	<b>3,301,294</b>	<b>Totals . . . . .</b>	<b>52,131</b>	<b>48,135</b>	<b>845,744</b>	<b>820,507</b>	<b>880,515</b>

1) See notes page 495.



COUNTRIES	MAY		EIGHT MONTHS (Oct. 1-May 31)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	MAY		TEN MONTHS (August 1-May 31)		TWELVE MONTHS (August 1- July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>EXPORTS.</b>						<b>(Thousand centals).</b>					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Grenada . . . . .	...	...	3) 3,042	3) 4,941	9,656	Bulgaria . . . . .	295	342	1,625	6,255	6,691
Dominican Republ. . . . .	...	...	3) 13,036	3) 9,420	35,975	Spain . . . . .	2	5)	9	5)	5)
Brazil . . . . .	...	...	1) 160,444	1) 132,375	210,683	Hungary . . . . .	258	518	3,461	9,870	10,752
Ecuador . . . . .	...	...	2) 5,498	2) 13,118	37,765	Lithuania . . . . .	2	2	29	49	55
Trinidad . . . . .	...	...	1) 31,652	1) 25,547	39,617	Poland . . . . .	205	218	289	1,530	1,929
Venezuela . . . . .	...	...	4) 6,393	4) 2,590	35,439	Rumania . . . . .	0	317	33	22,044	22,335
Ceylon . . . . .	538	556	6,709	8,303	9,266	U. S. S. R. . . . .	...	7)	7)	9,489	7)
Java and Madura . . . . .	...	...	1) 1,356	1) 1,642	3,366	Yugoslavia . . . . .	2	163	571	8,287	8,935
Cameroon . . . . .	1,737	1,027	32,282	22,705	27,315	Canada . . . . .	14,332	10,518	135,303	99,696	123,625
Ivory Coast . . . . .	11,151	4,773	55,471	50,601	54,578	United States . . . . .	223	4,848	16,444	58,509	65,566
Gold Coast . . . . .	32,633	9,725	420,145	399,574	462,878	Argentina . . . . .	8,569	7,344	60,876	77,010	83,679
Nigeria . . . . .	...	...	1) 128,631	1) 94,927	123,929	Chile . . . . .	...	...	5)	1)	26
St. Thomas and Prince Is. . . . .	...	...	1) 11,039	1) 13,360	25,867	India . . . . .	5)	88	5)	990	1,118
Togoland . . . . .	289	298	12,882	13,285	13,916	Turkey . . . . .	4	130	132	891	922
						Algeria . . . . .	...	...	1)	4,028	1)
						Tunis . . . . .	154	108	2,540	1,933	3,508
						Australia . . . . .	6,889	60,624	79,554	80,665	92,453
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1,106,152</b>	<b>Totals . . . . .</b>	<b>30,935</b>	<b>35,297</b>	<b>314,383</b>	<b>409,233</b>	<b>466,538</b>
<i>Importing Countries:</i>						<i>b) NET IMPORTS.</i>					
Germany . . . . .	0	18	44	474	496	Germany . . . . .	1,415	1,120	545	6,202	13,913
Belgium . . . . .	0	73	459	717	1,508	Austria . . . . .	820	425	6,034	6,587	8,113
France . . . . .	2	0	66	2	4	Belgium . . . . .	2,520	2,842	20,600	22,212	27,862
Netherlands . . . . .	421	143	2,449	4,526	6,740	Denmark . . . . .	481	637	6,151	9,087	10,412
United States . . . . .	842	567	7,359	5,604	7,011	Spain . . . . .	6)	126	6)	141	6,457
Australia . . . . .	0	0	22	141	143	Estonia . . . . .	0	33	0	256	262
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1,106,152</b>	Irish Free State . . . . .	1,085	961	9,167	9,828	11,715
						Finland . . . . .	220	190	2,077	1,691	2,555
						France . . . . .	966	5,558	16,336	34,901	47,137
						Gr. Brit. and N. Irel. . . . .	12,004	10,088	107,912	121,191	143,918
						Greece . . . . .	1,063	1,338	9,839	12,106	14,204
						Italy . . . . .	383	4,010	5,975	14,233	19,930
						Latvia . . . . .	0	29	15	395	575
						Norway . . . . .	580	126	4,065	4,422	5,090
						Netherlands . . . . .	983	1,213	13,051	15,353	18,636
						Portugal . . . . .	53	68	725	734	1,660
						Sweden . . . . .	126	128	1,819	3,135	4,096
						Switzerland . . . . .	7) 791	7) 906	7) 9,705	7) 9,881	7) 12,666
						Czechoslovakia . . . . .	1,164	1,122	3,946	12,392	14,758
						Chile . . . . .	...	...	1)	992	6)
						Ceylon . . . . .	35	37	421	474	542
						India . . . . .	117	6)	529	6)	518
						Indo-China . . . . .	37	51	386	461	4,231
						Japan . . . . .	243	1,010	2,460	10,265	12,584
						Java and Madura . . . . .	...	...	1)	1,023	1)
						Syria and Lebanon . . . . .	150	152	778	42	223
						Egypt . . . . .	...	...	1)	240	1)
						Union of S. Africa . . . . .	...	...	1)	159	1)
						New Zealand . . . . .	...	...	1)	946	1)
<b>Totals . . . . .</b>	<b>93,263</b>	<b>74,732</b>	<b>857,042</b>	<b>824,665</b>	<b>1,102,890</b>	<b>Totals . . . . .</b>	<b>25,336</b>	<b>32,170</b>	<b>225,896</b>	<b>301,957</b>	<b>385,172</b>

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 30 April. — 2) Data up to 31 March. — 3) Data up to 28 February. — 4) Data up to 31 December. — 5) See Net Imports. — 6) See Net Exports. — 7) Wheat only.

## STOCKS

STOCKS OF WHEAT, OATS AND MAIZE IN FARMERS' HANDS IN THE UNITED STATES.

PRODUCTS	First day of the month					First day of the month				
	July 1933	April 1933	July 1932	April 1932	July 1931	July 1933	April 1933	July 1932	April 1932	July 1931
	1,000 centals					1,000 bushels				
Wheat . . . . .	47,763	107,012	54,170	99,542	22,345	79,605	178,354	90,284	165,903	37,242
Oats . . . . .	65,044	149,455	45,276	116,101	53,890	203,261	467,048	141,487	362,815	168,406
Maize . . . . .	347,706	630,905	293,336	508,183	175,115	620,903	1,126,616	523,815	907,469	312,705

COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	July 1933	June 1933	May 1933	July 1932	July 1931	July 1933	June 1933	May 1933	July 1932	July 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	119,408	122,554	131,884	80,424	64,716	199,013	203,424	219,807	134,040	107,860
U. S. in Canada . . . . .	2,428	2,881	3,230	9,537	9,208	4,047	4,802	5,348	15,895	15,347
U. S. in the United States . .	76,648	70,522	74,637	101,043	122,505	127,746	117,536	124,395	168,405	204,175
Canad. in the United States .		2,765	1,498	2,719	3,613		4,609	2,497	4,532	6,021
Total . . .	198,484	198,222	211,249	193,723	200,042	330,806	330,371	352,083	322,872	333,403
<b>RYE:</b>										
Canadian in Canada . . . .	2,959	2,835	2,895	3,957	7,023	5,284	5,062	5,169	7,066	12,541
U. S. in Canada . . . . .	1	1	55	136	928	1	1	99	242	1,657
U. S. in the United States . .	5,921	4,931	4,483	5,008	5,687	10,574	8,806	8,006	8,942	10,155
Canad. in the United States .		119	304	279	1		213	543	498	2
Total . . .	8,881	7,886	7,737	9,380	13,639	15,859	14,082	13,817	16,748	24,355
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,337	3,158	3,122	2,085	5,356	6,952	6,580	6,505	4,344	11,158
U. S. in Canada . . . . .	10	10	10	3	22	21	21	21	6	45
U. S. in the United States . .	...	5,847	4,608	1,341	3,277	...	12,181	9,599	2,793	6,827
Canad. in the United States .	...	0	0	27	78	...	0	0	57	163
Total . . .	...	9,015	7,740	3,456	8,733	...	18,782	16,125	7,200	18,193
<b>OATS: (1)</b>										
Canadian in Canada . . . .	3,505	3,334	3,638	1,924	3,085	10,952	10,419	11,369	6,013	9,641
U. S. in Canada . . . . .	230	144	108	43	164	719	449	336	134	514
U. S. in the United States . .	...	7,667	7,001	3,410	2,416	...	23,959	21,878	10,657	7,550
Canad. in the United States .	...	0	0	0	18	...	0	0	0	55
Total . . .	8,881	11,145	10,747	5,377	5,683	...	34,827	33,583	16,804	17,760
<b>MAIZE:</b>										
U. S. in Canada . . . . .	1,863	1,589	777	402	98	3,326	2,837	1,387	717	176
Of other origin in Canada .	507	623	724	707	262	905	1,113	1,293	1,263	467
U. S. in the United States .	25,838	21,716	17,896	9,020	4,602	46,140	38,779	31,958	16,107	8,217
Total . . .	28,208	23,928	19,397	10,129	4,962	50,371	42,729	34,638	18,087	8,860

1) For oats the bushel is of 32 lbs.

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	July 1933	June 1933	May 1933	July 1932	July 1931	July 1933	June 1933	May 1933	July 1932	July 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat) .	18,984	23,669	25,528	27,101	29,890	31,640	39,448	40,880	45,168	49,816
Rye . . . . .	648	701	893	1,032	730	1,157	1,251	1,594	1,843	1,303
Barley . . . . .	2,696	1,140	1,948	1,740	3,680	5,617	2,375	4,058	3,625	7,667
Oats . . . . .	890	928	995	650	1,898	2,780	2,900	3,110	2,030	5,930
Maize . . . . .	12,821	14,414	10,522	20,832	25,877	22,894	25,740	18,789	37,200	46,209

Authority: *Broomhall's Corn Trade News.*

## STOCKS OF CEREALS AND POTATOES IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks: total production				
	15 June 1933	15 May 1933	15 April 1933	15 June 1932	15 June 1931
Winter wheat . . . . .	7.7	12.7	21.3	3.6	2.8
Spring wheat . . . . .	9.7	16.5	30.3	5.1	3.5
Winter rye . . . . .	7.7	13.8	20.8	4.5	6.7
Winter barley . . . . .	3.9	6.4	9.1	2.4	2.9
Spring barley . . . . .	3.8	6.6	12.2	4.6	2.5
Oats . . . . .	16.5	23.3	32.3	13.3	14.8
Potatoes . . . . .	4.6	10.5	23.9	3.8	3.8

Authority: *Preisberichtstelle beim Deutschen Landwirtschaftsrat.*

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	June 1933	May 1933	April 1933	June 1932	June 1933	May 1933	April 1933	June 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	10,161	12,842	14,339	5,935	16,935	21,403	23,898	9,891
Flour for bread . . . .	3,635	2,540	2,743	2,549	1,344	1,296	1,399	1,300
TOTAL 2) . . . . .	13,673	16,228	17,996	9,332	22,789	27,048	29,991	15,553
RYE:								
Grain . . . . .	8,960	11,526	13,237	5,064	15,999	20,582	23,637	9,043
Flour for bread . . . .	1,177	1,327	1,455	1,023	601	677	742	522
TOTAL 2) . . . . .	10,529	13,296	15,177	6,429	18,804	23,741	27,100	11,479
BARLEY . . . . .	1,131	1,545	2,033	944	2,356	3,220	4,235	1,966
OATS . . . . .	1,144	1,570	1,898	1,049	3,576	4,905	5,932	3,279

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	July 1933	June 1933	May 1933	July 1932	July 1931	July 1933	June 1933	May 1933	July 1932	July 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Grain . . . . .	6,816	7,104	6,864	5,688	3,360	11,360	11,880	11,440	9,480	5,600
Flour as grain . .	576	744	672	888	624	960	1,240	1,120	1,480	1,040
TOTAL . . . . .	7,392	7,848	7,536	6,576	3,984	12,320	13,080	12,560	10,960	6,640
Barley . . . . .	640	880	880	700	600	1,333	1,833	1,833	1,458	1,250
Oats . . . . .	528	512	576	576	528	1,650	1,600	1,800	1,800	1,650
Maize . . . . .	2,712	1,368	1,608	2,448	1,584	4,843	2,443	2,871	4,371	2,829

1) Imported cereals.

Authority: *Broomhall's Corn Trade News*.

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	July 1933	June 1933	May 1933	July 1932	July 1931	July 1933	June 1933	May 1933	July 1932	July 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
<b>Great Britain:</b>										
American . . . . .	2,066	1,935	2,230	1,931	2,286	432	405	467	404	478
Argentine, Brazilian, etc. . . . .	101	79	88	53	191	21	16	18	11	40
Peruvian, etc. . . .	149	146	172	177	224	31	31	36	37	47
East Indian, etc. . .	282	284	286	392	800	59	59	60	82	168
Egyptian, Sudanese etc. . . . .	1,255	1,258	1,246	1,652	1,368	263	263	261	346	286
Other 1) . . . . .	243	182	140	119	244	51	38	29	25	51
TOTAL . . . . .	4,096	3,884	4,162	4,324	5,113	857	812	871	905	1,070
<b>Bremen:</b>										
American . . . . .	2,402	2,407	2,526	1,582	1,856	502	503	528	330	388
Other . . . . .	71	75	85	29	61	15	16	18	7	13
TOTAL . . . . .	2,473	2,482	2,611	1,611	1,917	517	519	546	337	401
<b>Le Havre:</b>										
American . . . . .	890	963	1,138	799	1,360	186	201	238	167	285
Other . . . . .	38	38	35	72	178	8	7	7	15	37
TOTAL . . . . .	928	1,001	1,173	871	1,538	194	208	245	182	322
<b>Total Continent 2):</b>										
American . . . . .	4,114	4,254	4,673	3,108	3,800	860	890	978	650	795
Argentine, Brazilian, etc. . . . .	32	21	20	35	106	7	4	4	7	22
E. Indian, Australian, etc. . . . .	141	166	160	74	228	29	35	33	15	48
Egyptian . . . . .	109	118	118	127	99	23	25	25	27	21
W. Indian, W. African, etc. . . . .	32	31	29	32	57	7	6	6	7	12
TOTAL . . . . .	4,428	4,590	5,000	3,376	4,290	926	960	1,046	706	898

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports  
Authority: *Liverpool Cotton Ass.*

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	June 1933	May 1933	April 1933	June 1932	June 1931	June 1933	May 1933	April 1933	June 1932	June 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . .	6,885	6,856	6,723	6,501	5,475	1,401	1,395	1,368	1,323	1,131
In public storage and at compresses . .	31,085	36,014	40,102	35,194	24,075	6,319	7,321	8,152	7,154	4,971
TOTAL . .	37,970	42,870	46,825	41,695	29,550	7,720	8,716	9,520	8,477	6,102

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	July 1933	June 1933	May 1933	July 1932	July 1931	July 1933	June 1933	May 1933	July 1932	July 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Bombay 1) . . . .	3,508	3,824	3,697	3,356	3,439	734	800	773	702	719
Alexandria . . . .	2,801	3,282	3,611	4,009	4,671	586	687	755	839	977

1) Stocks held by exporters, dealers and mills.

Authorities: East Indian Cotton Ass. and Commission de la Bourse de Minet-el-Bassal.

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	14	7	30	23	AVERAGE 1)				
	July	July	June	June	June	July	July	Commercial	
	1933	1933	1933	1933	1933	1933	1933	1931-32	1930-31
<b>WHEAT.</b>									
Budapest: Tisza region (78 kg. p. hl.; pengő p. quintal) . . . . .	13.37	n. q.	13.40	12.47	13.17	13.25	14.12	12.28	15.34
Braila: Good quality (lei p. quintal) 2) . . . . .	380	n. q.	n. q.	n. q.	n. q.	314	277	305	351
Winnipeg: No. 1 Manitoba (cents p. 60 lbs) . . . . .	91	80 1/4	72 1/4	68 1/4	66 3/4	54 3/4	56 3/4	59 3/4	64 1/4
Chicago: No. 2 Hard Winter (cents p. 60 lbs) . . . . .	104 3/4	99 1/4	90 1/4	78 3/4	78	49 1/4	52 3/4	54 3/4	78
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	113 3/4	101 1/4	94 1/4	81 3/4	80 1/4	52 1/4	64 1/4	66 1/4	77 1/4
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	119 1/4	108 1/4	102 1/4	90 1/4	89 1/4	60 1/4	n. q.	66 1/4	91 1/4
Buenos Aires (b); Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	6.75	6.40	6.00	5.90	5.88	6.69	5.88	6.68	6.83
Karachi: Karachi white, 2 % barley, 1 1/2 % dirt (rupees p. 656 lbs.) . . . . .	27-13-0	26-2-0	25-8-0	25-8-0	25-10-5	25-5-7	16-1-2	21-15-9	19-15-2
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	18.70	18.80	18.80	18.80	19.12	23.94	24.06	23.63	26.00
Hamburg, c. i. f. (Reichsmarks p. quintal):									
No. 2 Manitoba . . . . .	10.17	9.92	9.49	9.10	9.02	8.97	10.92	10.38	12.65
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	9.20	9.53	9.32	n. 13.00
Barusso 3) . . . . .	8.77	8.31	8.05	7.74	7.66	8.42	8.91	8.78	11.10
Antwerp (francs p. quintal):									
Home grown . . . . .	85.00	85.00	84.00	84.00	84.40	n. q.	98.50	83.10	95.50
No. 2 Hard Winter, Gulf 4) . . . . .	85.00	83.00	81.00	80.00	80.70	75.70	82.00	81.75	112.50
Paris: Home-grown, 75-77 kg. (francs p. quintal) . . . . .	n. q.	98.25	114.75	98.00	96.15	160.45	168.80	167.10	175.00
London: Home grown (shillings p. 504 lbs.) . . . . .	29/-	29/-	28/-	28/-	27/10 3/4	28/3 1/4	28/6	26/5	27/1
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.):									
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	24/1	20/8	22-3	23/7
No. 3 Manitoba . . . . .	30/1 1/4	28/9	27/4 1/4	25/6	25/8 1/4	24/2	21-3	22/9	25/4
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	25/3	20/5	25/3	26/4
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	25/3	20/11	26/5	26/7
Roseaf (afloat) 5) . . . . .	25/3	24/3	23/3	22/3	22/3 1/4	24/7	18/11	23/8	23/5
Choice White Karachi . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	21/8	n. q.	27/-	n. q.
Australian . . . . .	27/10 3/4	27/6	26/9	25/9	25/10 1/4	24/5	21/5	25/9	25/7
Milan (a): Home-grown, soft, "Buono mercantile" (78-78 kg. p. hl.; lire p. quintal) . . . . .	86.00	85.00	86.50	89.00	89.50	98.60	91.85	106.20	109.10
Genoa c. i. f.: Plate (shillings p. metric ton) 6) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 97/-	n. 2.21	110/-
<b>RYE.</b>									
Budapest: Home-grown (pengő p. quintal) . . . . .	n. q.	n. q.	5.55	5.17	5.61	8.76	12.41	12.24	10.79
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.40	15.30	15.30	15.20	15.32	18.11	18.21	19.00	17.18
Hamburg, c. i. f. (Reichsmarks p. quintal):									
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 9.50	n. q.
La Plata (74-75 kg. p. hl.) . . . . .	10) 6.83	10) 6.10	10) 5.97	10) 5.87	10) 5.81	6.98	7.60	8.36	n. 7.65
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	99	79 1/4	76 1/4	68 1/2	63 1/2	31 3/4	37 1/4	42 1/4	42 1/4
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.60	n. q.	3.62	3.50	3.57	5.55	4.26	5.13	4.45
<b>BARLEY.</b>									
Braila: Average quality (lei p. quintal) 2) . . . . .	175	182	n. 175	170	167	227	256	263	232
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	48 7/8	42	37 3/4	35 3/4	35	32 3/4	30 3/4	34 3/4	26 1/4
Chicago: Feeding (cents p. 48 lbs.) . . . . .	58	56	52	44	39 3/4	29 3/4	38 3/4	43 3/4	43 3/4
Minneapolis: Feeding, "lower grades" (cents per 48 lbs) . . . . .	60	52	50 1/4	37	36	26 3/4	33 3/4	38 3/4	37 3/4
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	n. q.	16.25	16.25	16.70	16.77	16.48	15.75	16.41	19.52
Antwerp: Danubian (francs p. quintal) . . . . .	54.00	52.00	50.50	51.00	52.00	71.40	75.00	77.25	73.25
London: English malting (shillings p. 448 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	28/9	n. q.	32/6	39/4	35/8
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):									
Danubian 3 % . . . . .	9) 15/10 1/4	9) 15/7 1/4	9) 15/9	9) 15/6	9) 15/4 1/4	n. q.	15/-	n. q.	15/2
Russian (Azoff-Black sea) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	9) 17/2	9) 14/4	18/11	14/3
Canadian Western, N. 3) . . . . .	n. q.	19/3	18/-	17/4 1/4	17/6 1/4	19/5	15/11	20/11	15/11
Californian malting (shillings p. 448 lbs.) . . . . .	n. 26/-	n. 25/-	n. 24/6	23/5	23/8 1/4	22/2	31/8	33/4	27/8
Groningen (c): Home grown winter (fl. p. quintal) . . . . .	3.62	n. q.	3.55	3.56	3.61	6.03	5.46	5.87	4.97

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) 20 January-17 March: quotations for Costanza. — 3) August-Dec. 1930: 78 kg. p. hl.; Jan. 1931-Jan. 1932: 79 kg.; Feb-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From July 1931: No. 1 Hard Winter, Gulf. — 5) August-Nov. 1930: 62 1/4 lbs. per bushel; Dec. 1930-Feb. 1931: 63 1/4 lbs.; March-Nov. 1931: 63 lbs.; Dec. 1931: 63 1/2 lbs.; Jan.-Dec. 1932: 64 lbs.; afterwards: 63 1/2 lbs. — 6) From April 1932: dollars p. quintal. — 7) No. 1 Manitoba. — 8) N. 1 Hard Winter — 9) Shipping August-Sept. — 10) 72-73 kg. p. hl.

PRODUCTS, MARKETS AND DESCRIPTION	14	7	30	23	AVERAGE 1)				Commercial Season	
	July	July	June	June	June	July	July	July		
	1933	1933	1933	1933	1933	1932	1931		1931-32	1930-31
OATS.										
Braila: Good quality (1st p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	225	318	285	247	
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	42 1/4	38 3/4	32 7/8	29 1/4	28 7/8	35 1/4	29 1/4	31 1/4	30	
Chicago: No. 2 White (cents per 32 lbs.) . . . . .	45	43 3/4	43	34 1/8	31 3/4	19 3/4	26 7/8	24 7/8	32 7/8	
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	4.45	4.15	4.05	4.05	4.03	5.55	3.99	5.33	3.58	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	13.80	13.95	13.95	13.85	13.81	16.15	15.89	15.10	16.17	
Paris: Home grown, black and other (francs p. quintal) . . . . .	62.50	65.25	66.00	73.50	62.60	113.80	85.20	101.75	81.00	
London: Home grown white (shillings p. 336 lbs.). London and Liverpool c. i. f., parcels (shillings p. 320 lbs.) . . . . .	18/-	18/-	18/-	18/-	18/-	24/6	20/4	21/3	18/4	
Danubian (39-40 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 12/1	
Plate (f. a. g.) . . . . .	12/4 1/2	12/1 1/2	11/9	11/6	11/7 1/4	14/2 1/2	10/6	14/5	10/9	
Chilian Tawny . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11/6	n. 16/-	12/-	
Milan (b), spot (lire p. quintal):										
Home grown . . . . .	52.50	52.50	52.50	52.50	53.00	n. 70.50	67.00	73.60	74.00	
Foreign imported . . . . .	50.00	50.00	50.00	49.00	49.00	62.70	62.75	65.20	60.40	
MAIZE.										
Braila: Danubian (1st p. quintal) 2) . . . . .	170	167	160	153	151	193	237	187	210	
Chicago: No. 2 Mixed American (cents p. 56 lbs.). Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	61	59 1/2	50 1/2	44 1/2	47 7/8	31 1/8	59 1/8	34	58 1/4	
Antwerp, spot (francs p. quintal):	4.10	4.02 1/2	3.92 1/2	3.87 1/2	3.86	4.83	3.80	4.63	3.82	
Bessarabian . . . . .	49.00	44.00	46.00	47.00	46.80	n. q.	75.25	n. q.	71.25	
Argentine Cinquantino . . . . .	69.00	67.50	65.00	68.00	68.90	70.00	76.00	63.30	81.00	
Yellow Plate . . . . .	48.00	47.50	46.00	46.00	47.80	58.20	62.00	57.20	65.00	
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.):										
Danubian . . . . .	16/-9	16/6	16/3	16/-	16/0 1/4	19/4	n. q.	n. 19/3	n. 17/4	
Yellow Plate . . . . .	16/7 1/2	16/10 1/2	16/4 1/2	16/1 1/2	16/1 1/2	18/6	14/3	18/2	15/6	
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. 19/-	n. 20/11	n. 18/1	51.90	
Milan (b) Home grown (lire p. quintal) . . . . .	51.00	49.00	49.00	49.00	50.25	77.20	49.25	68.70	51.90	
RICE (CLEANED).										
Milan (b), (lire p. quintal):										
Vialone (Camolino) . . . . .	242.50	242.50	242.50	242.50	226.25	185.50	133.10	181.15	145.90	
Maratelli (Camolino) . . . . .	175.00	175.00	175.00	175.00	152.50	159.50	109.85	151.25	117.35	
Originario (Raffinato) . . . . .	106.00	106.00	106.00	107.50	100.75	127.40	104.50	121.40	103.20	
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . . . . .	215	212	212	206	203	269 1/2	230 1/2	268 7/8	249 1/4	
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white (25 % broken) . . . . .	...	...	4.81	4.48	4) 4.48	5.54	6.48	5.48	6.73	
N. 2 Japan (40 % broken) . . . . .	...	...	4.48	4.23	4) 4.26	5.21	5.90	5.11	6.20	
London (a): c. i. f. (shillings p. 112 lbs.):										
Spanish Belloch, No. 3 oiled . . . . .	11/6	11/6	11/6	12/6	12/-	13/7	11/3	13/8	11/11	
Italian good, No. 6 oiled . . . . .	14/6	14/6	14/6	15/-	12/8 1/2	14/3	n. q.	14/-	13/7	
American Blue Rose . . . . .	16/3	16/6	16/6	17/-	17/4 3/4	15/7	17/11	17/1 1/4	18/7	
Burma, No. 2 . . . . .	7/-	7/-	6/10 1/2	6/10 1/2	6/10	7/10	7/2	8/4	7/11	
Saigon, No. 1 3) . . . . .	8/-	7/9	7/1 1/2	7/1 1/2	7/1 1/2	8/2	7/5	8/5	8/1	
Siam, Garden No. 1 3) . . . . .	8/9	9/-	9/1 1/2	9/1 1/2	9/-	8/9	8/-	9/4 1/2	9/5	
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	20.50	20.70	21.00	21.60	21.52	21.35	19.94	21.20	18.46	
LINSEED.										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	13.35	12.80	12.60	11.70	11.52	8.95	11.81	9.22	10.82	
Antwerp: Plate (francs p. quintal) . . . . .	134.50	134.00	129.50	119.50	119.60	97.70	161.00	103.25	146.00	
London, c. i. f. (£ p. long ton):										
La Plata (delivery Hull) . . . . .	11- 6-3	10-17-6	10-15-0	10- 7-6	10- 5-6	7-17-3	8-16-6	8- 8-4	8-14-1	
Bombay bold . . . . .	12-12-6	12- 5-0	12- 7-6	11-15-0	11-15-6	10-12-9	11-19-0	11-10-0	11- 9-6	
Duluth: No. 1 Northern (cents p. 56 lbs.) . . . . .	226	196 1/2	189 3/4	178 3/4	171 3/4	100	164 3/4	118 3/4	148	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) 20 Jan.-17 March: quotations for Costanza. — 3) From January 1932: Siam, Special. — 4) 16 June: 4.40; 2 June: 4.32; 26 May: 4.07; Average May: 4.07. — 5) 16 June: 4.23; 9 June: 4.23; 2 June: 4.15; 26 May: 3.90; Average May: 3.91.

PRODUCTS, MARKETS AND DESCRIPTION	14	7	30	23	AVERAGE 1)						
	July	July	June	June	June	July	July	Commercial			
	1933	1933	1933	1933	1933	1932	1931	Season	1931-32	1930-31	
COTTONSEED.											
Alexandria: Sakellaridis (piastres per ardeb) . . .	56.3	55.1	52.8	50.6	56.3	60.1	46.2	60.0	52.2		
London: Sakellaridis (delivery Hull: £ p. l. ton) .	5-18-9	6-2-6	5-16-3	5-10-0	6-0-9	6-4-0	4-19-0	6-3-7	5-12-6		
COTTON.											
New Orleans: Middling (cents per lb.) . . . . .	11.55	10.18	10.03	9.35	9.35	5.77	9.09	6.20	10.07		
New York: Middling (cents per lb.) . . . . .	11.60	10.30	10.15	9.50	9.48	5.91	9.22	6.35	10.38		
Bombay: M. g. Broach f. g. (rupees per 784 lbs.).	207 ½	202 ½	200	200	207	169	177 ¼	181 ¾	191 ¾		
Alexandria (talariis per kantar):											
Sakellaridis f. g. f. . . . .	15.20	15.30	15.10	14.65	14.97	12.74	13.76	12.17	17.12		
Ashmuni-Zagora f. g. f. . . . .	13.62	13.57	13.42	12.87	13.20	10.36	10.18	9.73	12.00		
Remen: Middling (U. S. cents per lb.) . . . . .	12.81	11.97	11.51	10.73	10.70	6.88	10.55	7.44	11.59		
M. g. Broach fully good (pence per lb.) . . . . .	n. 5.40	n. 5.30	n. 5.00	n. 4.85	n. 5.00	n. 4.11	n. 4.30	n. 4.48	n. 4.63		
Le Havre: Middling, Gulf (francs per 50 kg.) . .	265.00	250.00	263.00	251.00	257.40	204.00	312.00	216.00	349.00		
Liverpool (pence per lb.):											
Middling fair . . . . .	n. 7.53	n. 7.60	n. 7.58	n. 7.38	n. 7.45	n. 5.63	n. 6.26	n. 5.85	n. 6.93		
Middling . . . . .	6.33	6.40	6.38	6.18	6.25	4.68	5.06	4.79	5.72		
São Paulo, good fair . . . . .	n. 6.58	n. 6.65	n. 6.63	n. 6.43	n. 6.50	n. 4.93	5.26	n. 4.98	5.91		
M. g. Broach, fully good . . . . .	n. 5.40	n. 5.38	n. 5.38	n. 5.25	n. 5.29	n. 4.24	n. 4.16	n. 4.34	n. 4.25		
Sakellaridis, fully good fair . . . . .	8.38	8.51	8.37	8.20	8.33	6.79	7.68	6.76	9.08		
BUTTER.											
								1932	1931		
Copenhagen (a) Danish (Crs p. quintal). . . . .	158.00	148.00	146.00	146.00	145.60	169.50	190.00	178.70	209.00		
Leeuwarden, Commission for the Dutch butter quotations: (florins per kg.) . . . . .	0.52	0.52	0.52	0.52	0.52	0.96	1.32	0.94	1.34		
Maastricht, auction (b): Dutch (florins p. kg.) 2).	1.57	1.55	1.54	1.53	1.54	1.25	1.34	1.27	1.38		
Hamburg, auction (c): Schleswig-Holstein butter, with quality mark (R. M. per 50 kg.) . . . . .	113.74	113.26	113.20	113.25	113.01	107.67	126.49	115.83	131.22		
Kempten (c): Allgäu butter (Pfennige p. half kg.) 3).	108	108	108	108	108	98 ½	113	107	110		
London (d) (shillings p. cwt.):											
British blended . . . . .	107/4	107/4	107/4	116/8	114/4	133/-	140/-	131/6	140/4		
Danish . . . . .	96/-	96/-	96/-	96/-	95/6	113/6	121/10	123/2	133/4		
Irish creamery, salted . . . . .	86/-	85/-	85/-	86/-	85/3	109/8	119/2	n. 111/-	119/5		
Dutch . . . . .	99/-	99/-	99/-	99/-	99/-	112/5	119/7	n. 115/10	132/1		
Argentine . . . . .	82/-	82/-	83/-	82/-	80/3	100/6	116/7	103/9	117/7		
Siberian 4) . . . . .	5) 76/-	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 93/3	n. q.		
Australian, salted . . . . .	85/-	84/-	84/-	86/-	84/6	107/-	113/2	105/7	116/8		
New Zealand, salted . . . . .	86/-	85/-	85/-	87/-	86/6	109/3	118/10	109/10	119/11		
CHEESE.											
Milan (lire per quintal):											
Parmigiano-Reggiano, 1st quality of last year's production . . . . .	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00	1,100.00	1,185.00	1,016.00	1,103.00		
Green Gorgonzola, mature, choice . . . . .	455.00	455.00	455.00	455.00	459.00	465.00	575.00	512.70	616.00		
Rome: Roman pecorino, choice (lire p. quintal) .	1,050.00	1,075.00	1,075.00	1,075.00	1,072.50	1,347.00	1,175.00	1,251.00	1,121.00		
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . . . .	19.00	19.00	25.00	25.00	24.20	20.90	37.70	24.41	32.63		
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.) . . . . .	24.00	26.50	26.50	26.50	26.50	25.90	41.40	26.92	37.93		
Kempten (c): (Pfennige per half kg.):											
Soft cheese, green (20 % butterfat) . . . . .	23 ½	22 ½	21 ½	20 ½	19 ¾	23 ¾	24 ¾	21	24		
Rmmenthal from the Allgäu (whole milk cheese) 1st quality . . . . .	72	72	71	71	70 ¾	83	100 ½	81 ¾	97 ¾		
London (d) (shillings per cwt.):											
English Cheddar . . . . .	100/-	100/-	100/-	100/-	100/-	94/-	102/-	109/-	99/10		
Canadian . . . . .	78/6	78/-	76/-	76/-	75/6	62/-	78/10	72/10	75/9		
New Zealand . . . . .	54/6	54/-	53/-	55/6	54/10	62/-	62/11	63/1	63/2		
Liverpool (d): Engl. Cheshire, ungraded (sh. p. cwt.)	56/-	56/-	56/-	56/-	58/4	79/4	76/1	103/10	94/3		

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From January 1933: quotations in Zutphen; see note on page 425 of the "Crop Report" of June. — 3) The method of quotation was changed in January 1932; in June another change has occurred; see note on page 425 of the "Crop Report" of June. — 4) September 1932-January 1933: Russian. — 5) Russian.



## QUARTERLY REVIEW OF PRICES 1)

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							
		June	May	April	Jan.-	April-	April-	Agricultural	
		1933	1933	1933	March	June	June	1931-32	1930-31
					1933	1932	1931		
GERMANY (Prices in Reichsmarks per quintal)									
A I	*Wheat (Berlin) . . . . .	19.12	19.72	19.62	19.23	26.47	28.17	23.64	26.39
	*Rye (Berlin) . . . . .	15.32	15.47	15.57	15.41	19.70	19.78	19.02	17.15
	*Barley, feeding (Berlin) . . . . .	16.77	17.09	16.74	16.35	17.77	22.21	16.35	19.64
	*Oats (Berlin) . . . . .	13.81	13.45	12.60	11.96	16.34	18.27	15.07	16.28
	*Red potatoes (Berlin) . . . . .	2.70	n. q.	n. q.	2.65	3.43	4.61	3.57	3.29
A II	Milk, fresh (Berlin) . . . . .	13.85	13.85	13.85	13.85	15.00	17.23	15.06	17.62
	*Butter (Hamburg) . . . . .	226.00	219.22	183.72	189.74	228.08	251.22	245.35	282.10
	*Cheese, Emmenthal variety (Kempten) 3) . . . . .	141.50	146.00	149.00	149.00	166.00	197.65	180.10	192.00
	*Beef, live weight (Berlin) . . . . .	67.40	61.00	61.00	61.07	71.18	93.78	76.06	106.32
	Veal, live weight (Berlin) . . . . .	66.20	70.20	76.80	63.13	72.40	110.23	81.87	126.23
	*Pork, (220-265 lb.), live weight (Berlin) . . . . .	65.80	67.00	67.80	73.13	73.65	89.67	87.75	111.25
B I	Basic slag (Aachen) 4) . . . . .	0.260	0.242	0.228	...	0.221	0.233	0.23	0.30
	*Superphosphate of lime 18 % (Hildesheim) 4) . . . . .	0.331	0.331	0.331	0.310	0.310	0.338	0.319	0.335
	*Potash salts 38-42 % (mine stations) 4) . . . . .	0.161	0.158	0.170	0.170	0.162	0.182	0.159	0.151
	Sulphate of ammonia 4) . . . . .	0.760	0.760	0.760	0.753	0.760	0.856	0.73	0.83
	Nitrate of lime 4) . . . . .	0.990	0.990	0.990	0.970	0.990	1.070	0.98	1.03
B II	Wheat bran (Hamburg) . . . . .	8.77	8.32	8.02	8.36	10.83	13.41	9.86	9.97
	Linseed cake (Hamburg) . . . . .	13.59	10.72	10.84	10.57	10.56	13.65	12.23	15.39
	Coconut cake (Hamburg) . . . . .	15.80	10.86	10.79	10.59	10.93	13.18	11.30	13.32
	Groundnut cake (Hamburg) . . . . .	13.58	10.85	10.90	10.64	11.33	12.25	11.99	12.50
	Crushed soya extraction residue (Hamburg) . . . . .	11.53	9.20	9.64	9.22	10.82	12.73	11.26	13.44
DENMARK (Prices in Danish crowns per quintal)									
A I	Wheat (Copenhagen) . . . . .	n. q.	n. q.	n. q.	11.37	13.50	11.41	11.92	12.41
	Barley (Copenhagen) . . . . .	12.42	12.36	12.10	11.65	14.42	11.50	13.13	11.18
	Oats (Copenhagen) . . . . .	11.67	11.32	11.35	11.27	13.14	13.30	12.87	11.86
A II	*Butter (Copenhagen) . . . . .	145.60	149.50	158.40	165.30	157.00	195.35	192.50	225.00
	*Eggs . . . . .	79.20	73.00	51.50	100.33	63.43	74.00	98.00	121.00
	*Pork, live weight . . . . .	124.40	135.50	127.00	93.17	70.67	89.00	73.00	98.00
B I	Superphosphate 18 % . . . . .	6.50	6.50	6.50	6.30	5.95	5.95	5.65	5.85
	Potash salts 40 % . . . . .	13.65	13.65	13.65	13.65	13.75	12.95	12.98	12.62
	Sulphate of ammonia . . . . .	14.70	14.70	14.70	14.45	12.35	17.65	12.18	17.43
	Nitrate of lime, Norwegian . . . . .	14.55	14.55	14.55	14.35	13.45	16.85	13.73	16.35
B II	Rye, imported (Jutland) . . . . .	9.48	10.05	10.62	9.84	11.43	8.56	10.31	8.60
	Maize, Plate (Jutland) 5) . . . . .	9.95	9.97	9.90	10.08	9.43	7.75	8.64	9.23
	Wheat bran, Danish (Copenhagen) . . . . .	*) 8.82	*) 9.00	9.05	*) 9.26	10.37	9.87	9.26	9.12
	Cottonseed cake (Copenhagen) . . . . .	12.97	12.68	13.27	13.43	11.71	13.12	12.18	14.37
	Sunflower-seed cake (Copenhagen) . . . . .	13.47	12.88	13.62	14.13	10.48	11.45	11.50	12.55
	Groundnut cake (Copenhagen) . . . . .	14.42	13.98	14.52	15.82	13.83	12.27	13.99	12.58
	Crushed soya extraction residue (Copenhagen) . . . . .	13.97	13.78	14.42	14.93	13.57	12.71	12.94	13.08

\*) Indicates that the series is published also in the Intern. Yearbook of Agricultural Statistics, and used in the table of Average monthly prices in gold francs per quintal. — §) Indicates that the series is published in the International Yearbook of Agricultural Statistics.

1) Each quarter a list is published for several countries containing prices of plant (A I) and animal (A II) products sold by the farmer, as well as of fertilizers (B I), and of concentrated feeding stuffs for livestock (B II) bought by the farmer. — In the case where the market is not indicated, the price is the average one for the country. — The prices paid to farmers for sugar beet are generally fixed once a year and therefore are not inserted in these tables. — 2) July to June. — 3) From January 1931 prices of the first quality; before that date average prices of all qualities. — 4) Prices per unit of fertilizer material in a metric quintal. — 5) Until June 1931: prices in Copenhagen. — 6) Wheat bran, La Plata.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		June	May	April	Jan.-	April-	April-	1931-32	1930-31	
		1933	1933	1933	March 1933	June 1932	June 1931			
FRANCE (Prices in francs per quintal)										
A I	*Wheat (Paris; . . . . .	96.15	97.55	99.00	105.40	172.55	186.55	167.75	173.90	
	Rye (Paris) . . . . .	85.00	78.00	81.00	77.65	107.00	88.00	99.65	84.60	
	Malting barley (Paris) . . . . .	83.00	80.00	80.00	82.65	95.70	91.65	96.25	92.35	
	*Oats (Paris) . . . . .	62.60	66.10	69.35	76.55	114.60	89.60	99.35	79.80	
	Wine, red (southern markets) (hectol.) . . . . .	...	125.00	128.00	133.00	83.00	153.00	101.00	154.00	
A II	*Beef, dead weight (Paris) . . . . .	536.00	560.00	569.00	581.00	738.00	961.00	783.00	1,050.00	
	*Pork, live weight (Paris) . . . . .	612.00	647.00	647.00	743.00	648.00	579.00	593.00	665.00	
	*Mutton, dead weight (Paris) . . . . .	1,010.00	1,083.00	1,248.00	1,159.00	1,116.00	1,497.00	1,123.00	1,504.00	
B I	\$Basic slag, 18 % (Thionville) . . . . .	22.50	22.50	22.50	22.50	23.40	23.40	23.40	24.30	
	\$Superphosphate 14 % (North and East) . . . . .	27.25	27.25	27.25	26.65	27.15	30.40	27.75	31.15	
	\$Sylvinit, minimum 12 % . . . . .	10.60	10.60	10.60	10.60	10.60	10.60	10.60	10.60	
	Nitrate of soda (Dunkirk) . . . . .	92.50	92.50	92.25	90.50	99.85	112.65	101.25	109.40	
	Sulphate of ammonia 20.4 % . . . . .	94.00	94.00	94.00	93.15	99.65	115.50	101.85	112.20	
B II	Linseed cake (North) . . . . .	61.25	62.00	61.75	69.75	72.15	86.00	80.00	103.00	
	Coconut cake (Marseilles) . . . . .	60.00	64.00	68.00	68.00	67.00	78.35	70.00	73.00	
	Groundnut cake (Marseilles) . . . . .	55.00	55.00	60.00	66.00	73.35	77.65	78.75	85.00	

## GREAT BRITAIN (A: Prices in shillings and pence per cwt;

B: Prices in pounds sterling, etc. per long ton)

A I	Wheat . . . . .	6/4	5/7 <sup>9</sup> / <sub>16</sub>	5/2	5/3	6/2	5/7	6/-	6/4 <sup>1</sup> / <sub>2</sub>
	Fodder barley . . . . .	7/-	6/6 <sup>9</sup> / <sub>16</sub>	6/3 <sup>1</sup> / <sub>2</sub>	6/8 <sup>1</sup> / <sub>16</sub>	7/4	7/1	8/1	7/11
	Oats . . . . .	5/9	5/9 <sup>1</sup> / <sub>16</sub>	5/9 <sup>1</sup> / <sub>16</sub>	5/10 <sup>1</sup> / <sub>16</sub>	7/9 <sup>1</sup> / <sub>16</sub>	6/5 <sup>1</sup> / <sub>16</sub>	7/-	6/1
A II	\$Potatoes (London) . . . . .	n. q.	4/11	4/4	4/9 <sup>1</sup> / <sub>16</sub>	11/11	8/9	9/10	7/-
	†Butter (London) . . . . .	114/5	114/5	112/-	117/10	131/11	141/10	136/-	144/9
	*Cheese, Cheddar (London) . . . . .	100/-	97/7	100/-	103/10	121/8	105/4	109/-	98/4
	*Beef, dead weight (London) . . . . .	66/6	67/8	70/7	71/7 <sup>1</sup> / <sub>16</sub>	80/11	79/9	76/-	79/2
	*Mutton, dead weight (London) . . . . .	88/8	94/3	93/11	86/8 <sup>1</sup> / <sub>16</sub>	78/2	110/1	84/2	107/10
	*Pork, dead weight (London) . . . . .	64/2	71/2	79/4	79/4	68/10	87/-	74/4	102/10
B I	\$Basic slag 14 % (London) . . . . .	2-3-0	2-3-0	2-3-0	2-3-0	2-1-5	2-2-6	2-1-6	2-2-3
	Superphosphate, 16 % (London) . . . . .	2-16-0	2-16-0	2-16-0	2-16-0	2-17-0	3-1-0	2-17-2	3-3-6
	Kainit 14 % (London) . . . . .	3-7-0	3-7-0	3-7-0	3-7-0	3-6-0	3-3-0	3-3-0	3-1-6
	\$Nitrate of soda, 15 1/2 % (London) . . . . .	8-16-0	8-16-0	8-16-0	8-15-2	9-0-0	10-0-0	8-17-6	9-16-8
	\$Sulphate of ammonia 20.6 % (London) . . . . .	6-10-0	6-10-0	6-10-0	6-7-0	6-13-0	9-10-0	6-15-11	9-7-2
B II	Bran, British (London) . . . . .	3-9-9	4-14-2	4-19-3	5-11-9	6-2-8	4-18-5	5-14-10	4-16-4
	Bran, middlings, imported (London) . . . . .	4-10-0	4-10-0	4-10-6	4-18-10	6-4-8	4-10-7	5-11-9	4-11-5
	Linseed cake, English (London) . . . . .	8-17-0	8-14-2	8-11-3	6-12-11	8-6-9	8-12-0	8-11-3	9-12-6
	Cottonseed cake (London) . . . . .	6-1-6	6-0-0	5-17-0	5-19-11	4-17-9	5-3-9	3-2-6	4-17-8
	Palm kernel cake (Liverpool) . . . . .	6-0-0	6-3-0	6-5-0	6-1-8	6-10-2	6-1-0	6-11-2	5-9-2

## ITALY (Prices in lire per quintal)

A I	*Wheat, soft (Milan) . . . . .	89.50	94.75	100.20	108.15	117.35	106.40	105.65	111.90
	Wheat, hard (Palermo) . . . . .	108.00	111.00	122.00	122.00	137.00	141.00	133.00	135.00
	†Oats (Milan) . . . . .	53.00	55.10	60.10	66.00	n. 75.85	72.15	73.30	74.30
	*Maize (Milan) . . . . .	50.25	51.00	46.50	54.75	76.30	52.50	64.00	56.30
	Rice "Maratelli" (Milan) . . . . .	157.50	140.60	136.20	136.90	155.60	120.80	135.40	125.55
	Hemp, fibre . . . . .	...	259.00	268.00	272.00	228.00	212.35	217.00	248.00
	\$Olive oil "Soprafino locale" (Bari) . . . . .	403.00	380.00	390.00	405.00	500.00	580.00	518.00	552.00
	\$Wine, ordinary, 11° to 13° (Bari) (hectol.) . . . . .	65.00	65.00	65.00	65.50	80.00	108.00	86.00	118.00

\*) Indicates that the series is published also in the Intern. Yearbook of Agricultural Statistics and used in the table of Average monthly prices in gold francs per quintal. — \$) Indicates that the series is also published in the Intern. Yearbook of Agricultural Statistics. — †) Indicates that the series is published also in the Monthly Review of Prices of this Crop Report.

x) March: 269.00.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE						
		June	May	April	Jan.-	April-	April-	Agricultural year
		1933	1933	1933	March 1933	June 1932	June 1931	
								1931-32 1930-31

## ITALY (continued)

A II	*Cheese (Parmigiano-Reggiano) (Milan) . . . . .	1,050.00	1,050.00	1,050.00	1,015.00	939.00	1,121.00	1,026.00	1,139.00
	Eggs, fresh (Milan) (per 100) . . . . .	31.40	30.00	27.75	35.10	27.25	33.35	40.25	47.00
	Beef, live weight (Milan) . . . . .	250.00	262.00	256.00	257.50	302.00	354.00	321.00	406.00
	Pork, live weight (Milan) . . . . .	437.00	445.00	422.00	413.35	362.00	371.00	363.00	443.00
B I	Basic slag 16-20 % (Chiasso) 1) . . . . .	0.960	0.960	0.960	1.143	1.105	1.150	1.06	1.29
	Superphosphate, mineral, 15-17 % (Genoa) 1) . . . . .	1.195	1.195	1.195	1.195	1.195	1.170	1.19	1.24
	Chloride of potassium (Genoa) . . . . .	67.50	66.00	65.50	66.50	69.50	78.00	72.00	80.25
	Sulphate of ammonia (Genoa) . . . . .	80.80	80.50	80.50	79.60	78.60	73.85	75.40	81.75
	Copper sulphate (Genoa) . . . . .	114.00	103.30	96.75	95.45	120.50	168.00	133.65	182.00
B II	Wheat bran (Genoa) . . . . .	21.70	24.10	27.35	28.60	47.95	39.35	49.30	45.00
	Rice bran (Milan) . . . . .	17.50	29.00	30.80	36.45	43.85	37.00	41.70	36.15
	Linseed cake (Milan) . . . . .	37.50	41.00	40.90	46.75	57.50	57.35	62.15	65.60
	Groundnut cake (Milan) . . . . .	35.50	42.00	40.90	47.15	52.50	50.35	55.15	55.10
	Rapeseed cake (Milan) . . . . .	20.50	21.50	21.90	25.40	30.35	35.65	33.30	36.00

## NETHERLANDS (Prices in guilders per quintal)

A I	Wheat (Groningen) 2) . . . . .	n. 15.00	n. 15.00	n. 15.00	n. 15.00	n. 12.50	6.34	n. 12.50	6.94
	† Rye (Groningen) . . . . .	3.57	3.73	3.97	3.86	5.90	4.43	5.02	4.49
	† Barley (Groningen) . . . . .	3.61	3.76	4.00	4.46	6.45	5.32	5.80	5.00
	Oats (Groningen) . . . . .	3.36	3.55	3.88	3.97	5.95	5.52	5.76	5.30
	Peas (Rotterdam) . . . . .	n. q.	n. q.	10.25	9.39	11.20	8.01	11.40	9.40
	Flax, fibre (Rotterdam) . . . . .	49.00	50.00	50.00	52.33	49.00	56.50	52.55	60.80
	§ Potatoes (Amsterdam) . . . . .	n. 1.90	1.70	1.70	2.26	4.80	8.70	3.97	5.03
A II	* Butter for export (Leeuwarden) . . . . .	52.00	52.00	54.00	65.58	97.00	129.70	115.00	153.00
	† Butter for home consumption (Maastricht) . . . . .	154.00	154.50	155.75	n. 158.00	100.00	136.00	118.00	157.00
	† Cheese, Gouda 45 % (Gouda) . . . . .	53.00	53.75	48.88	56.45	43.11	71.47	62.88	83.09
	* Cheese, Edam 40 % (Alkmaar) . . . . .	48.40	48.24	40.50	48.60	43.56	66.71	56.26	74.44
	* Eggs (Roermond) (per 100) . . . . .	2.17	2.14	1.96	3.56	2.93	4.18	4.52	6.26
	Beef, dead weight (Rotterdam) . . . . .	56.00	56.00	56.00	58.33	70.16	96.50	76.70	100.00
	* Pork, live weight (Rotterdam) . . . . .	32.00	32.50	32.00	30.50	24.83	39.00	35.35	49.00
B I	Basic slag 1) . . . . .	n. 0.112	n. 0.108	0.105	0.134	0.101	0.124	0.097	0.144
	Superphosphate 17 % . . . . .	n. 1.95	n. 1.95	1.95	1.96	2.00	2.50	2.15	2.68
	Kainit 1) . . . . .	0.146	0.146	0.146	0.144	0.141	0.144	0.144	0.150
	Nitrate of soda . . . . .	6.67	6.76	6.75	6.71	7.65	10.70	7.82	10.48
	Sulphate of ammonia 20 ½ % . . . . .	4.81	4.80	4.76	4.73	4.12	9.83	4.45	9.62
B II	Maize (Rotterdam) . . . . .	3.31	3.50	3.60	3.65	4.14	4.91	3.89	5.43
	Linseed cake, Dutch . . . . .	5.82	5.76	5.71	5.98	6.05	7.80	6.85	9.05
	Coconut cake . . . . .	5.70	5.69	5.80	6.03	6.33	7.98	6.81	7.88
	Groundnut cake . . . . .	5.37	5.59	5.85	6.19	6.92	7.32	7.20	7.43

## POLAND (Prices in zlotys per quintal)

A I	Wheat (Warsaw) . . . . .	...	38.40	38.00	31.55	30.84	33.53	27.48	31.17
	§ Rye (Warsaw) . . . . .	...	19.65	20.10	18.00	28.81	27.79	25.56	21.33
	Barley (Warsaw) . . . . .	...	15.95	16.65	16.95	24.63	n. 27.30	24.42	25.55
	Oats (Warsaw) . . . . .	...	14.80	15.70	15.95	25.44	29.43	24.36	24.01
A II	Butter (Warsaw) . . . . .	...	318.00	404.00	311.00	348.00	424.00	397.00	486.00
	Beef, live weight (Warsaw) . . . . .	...	69.00	68.00	59.00	86.65	85.00	77.55	103.00
	Pork, live weight (Warsaw) . . . . .	...	116.00	121.00	103.65	129.00	124.00	124.30	152.00
	* Eggs (Warsaw) (per 100) . . . . .	...	5.95	5.54	10.95	7.76	9.14	10.87	14.25
B I	Superphosphate . . . . .	0.62	0.62	0.62	0.62	0.50	0.82	0.55	0.83
	Potash salts 25 % . . . . .	10.75	9.62	13.75	13.58	13.75	13.75	13.75	13.75
	Sulphate of ammonia . . . . .	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
B II	Wheat bran (Warsaw) . . . . .	11.20	9.75	10.00	10.33	16.46	21.11	15.62	16.52
	Rye bran (Warsaw) . . . . .	11.45	10.00	9.75	9.32	66.72	21.06	15.03	14.15
	Linseed cake (Warsaw) . . . . .	18.50	19.00	19.50	20.13	23.06	31.50	24.77	31.40
	Rapeseed cake (Warsaw) . . . . .	14.25	14.25	14.45	15.47	17.60	25.28	18.71	21.90

\*) Indicates that the series is published also in the Intern. Yearbook of Agricultural Statistics and used in the table of Average monthly prices in gold francs per quintal. — §) Indicates that the series is also published in the International Yearbook of Agricultural Statistics. — †) Indicates that the series is published also in the Monthly Review of Prices of this Crop Report.

1) Prices per unit of fertilizer material in a metric quintal. — 2) See note on wheat prices in the Netherlands (page 75 of the Crop Report of January).

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							
		June 1933	May 1933	April 1933	Jan.- March 1933	April- June 1932	April- June 1931	Agricultural year	
								1931-32	1930-31

## SWEDEN (Prices in Swedish crowns per quintal)

A I	Wheat (Stockholm) 1)	19.25	18.70	18.06	17.46	18.26	20.22	17.84	19.43
	Rye (Stockholm) 1)	17.75	17.00	16.75	16.10	16.32	17.22	16.14	16.33
	Barley (Stockholm) 1)	n. q.	10.00	10.08	n. 10.75	12.60	13.66	12.36	12.25
	Oats (Stockholm) 1)	9.18	8.50	8.36	8.53	10.69	12.18	10.40	10.18
A II	Beef, live weight (Göteborg)	31.00	31.00	31.00	31.17	34.00	46.65	38.65	52.00
	Pork, live weight (Göteborg)	61.00	62.75	58.87	57.35	55.50	53.33	51.15	65.00
	Butter (Malmö) 2)	198.75	182.50	165.00	162.83	162.50	184.00	184.00	210.00
	Eggs (Stockholm)	55.00	61.33	53.60	86.33	59.25	71.00	95.00	144.00
B I	Superphosphate 20 %	7.02	7.02	7.02	6.77	7.85	7.78	7.36	7.75
	Potash salts, 20 %	8.57	8.57	8.57	8.57	7.75	7.95	7.78	7.92
	Chilisalt peter	18.95	18.95	18.95	18.45	18.35	19.04	18.65	18.59
	Calcium cyanamide	16.50	16.50	16.50	16.50	15.50	18.10	16.47	18.10
B II	Maize, La Plata	9.38	9.20	8.91	9.20	10.27	8.86	9.12	10.07
	Wheat bran	8.74	8.85	9.00	9.30	11.25	10.36	9.88	9.55
	Groundnut cake	14.18	13.70	14.19	15.00	15.45	13.41	14.70	13.47
	Cottonseed cake	12.15	11.55	11.16	11.97	12.25	12.59	12.25	12.80
	Soya meal	13.66	12.95	13.22	13.87	15.45	14.13	14.25	14.08

## CZECHOSLOVAKIA (Prices in Czech. crowns per quintal)

A I	Wheat	156.00	162.00	161.00	152.65	150.75	157.00	148.00	149.00
	Rye	89.00	84.50	83.50	86.50	140.15	143.00	145.70	108.00
	Barley	102.50	81.50	77.00	79.00	98.35	148.35	116.50	134.00
	Oats	77.00	74.50	70.50	73.50	103.85	150.65	119.90	118.00
	Edible potatoes	22.00	27.50	28.50	28.50	24.35	44.35	34.60	42.80
	Hops	4,845.00	4,070.00	2,324.00	2,062.00	502.00	642.00	559.00	934.00
A II	Butter	1,850.00	1,775.00	1,675.00	1,733.00	2,342.00	2,217.00	2,158.00	2,179.00
	Fresh eggs (per 100)	46.25	43.35	45.85	77.20	42.50	56.40	58.25	74.10
	Beef, dead weight	700.00	700.00	650.00	783.00	775.00	925.00	844.00	981.00
	Veal, dead weight	775.00	775.00	725.00	708.00	742.00	921.00	769.00	981.00
	Pork, dead weight	950.00	975.00	925.00	1,017.00	909.00	858.00	914.00	1,014.00
B I	Basic slag, 15 %	34.85	34.85	34.85	34.85	34.15	37.05	35.05	39.20
	Superphosphate, 16 to 18 %	49.15	49.15	49.20	50.05	51.85	51.85	51.85	52.85
	Kainit, 14 %	20.30	18.80	21.00	21.00	22.90	23.70	22.00	23.10
	Chile salpeter	147.00	147.00	147.00	147.00	149.35	169.80	149.75	165.15
	Sulphate of ammonia, 20 1/2 %	127.60	127.60	127.60	127.60	129.10	140.00	128.20	139.65
B II	Maize, imported	65.75	65.25	65.75	65.85	63.40	73.00	64.10	79.45
	Wheat bran (Prague)	62.50	62.00	58.50	56.35	77.40	89.00	77.25	79.00
	Rye bran (Prague)	62.50	61.60	57.50	55.85	79.50	90.00	79.00	75.00
	Crushed soya (Prague)	99.50	99.50	105.25	108.50	109.00	127.65	113.25	133.00
	Rapeseed cake (Prague)	90.50	90.50	n. q.	93.60	101.60	101.00	100.00	99.00
	Linseed cake (Prague) 3)	93.15	92.50	93.50	95.90	119.00	133.00	123.00	137.00
	Groundnut cake (Prague) 4)	95.80	93.85	98.00	103.95	115.80	122.65	122.00	125.00

1) Till the end of 1932 average prices for the whole country. — 2) From November 1932 price for the whole country; butter with quality Mark, c. i. f. place of consumption or port of export. — 3) From Dec. 1932, delivery at Lovosice. — 4) From Nov. 1932 until March 1933, delivery at Strekov.

## AVERAGE MONTHLY PRICES IN GOLD FRANCS PER QUINTAL \*)

PRODUCTS MARKETS AND DESCRIPTION	June	May	April	March	Febr.	January	June	June	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>WHEAT</b>										
Winnipeg: No 1 Manitoba . . . . .	9.44	7.52	8.18	7.86	7.27	7.40	9.27	11.62	9.33	10.76
Chicago: No 2 Hard Winter . . . . .	12.16	11.94	11.49	10.14	9.09	9.19	n. 9.86	14.28	10.06	12.73
Buenos Aires: Barletta . . . . .	7.74	7.80	7.62	7.09	7.20	7.48	9.14	9.49	8.90	9.33
Berlin: Home grown . . . . .	23.61	23.66	24.23	24.53	23.84	22.82	31.77	33.59	28.33	30.62
Paris: Home grown . . . . .	19.52	19.80	20.10	20.36	21.83	22.06	34.61	38.19	29.94	35.12
London and Liverpool:										
South Russian . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	12.79	n. 10.63	11.55
No 3 Manitoba . . . . .	10.36	10.46	9.92	9.60	9.32	9.66	10.48	12.69	10.96	12.59
No 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	10.77	12.69	n. 11.45	11.96
Rosafé . . . . .	8.98	8.85	8.29	8.20	8.35	8.86	10.48	11.63	10.43	11.26
Australian . . . . .	10.41	10.10	9.54	9.34	9.56	9.82	11.03	13.08	11.14	12.42
Milan: Home grown, soft . . . . .	24.23	25.56	26.68	28.02	28.59	29.64	29.88	27.44	29.30	27.32
<b>RYE</b>										
Berlin: Home grown . . . . .	18.92	18.56	19.23	19.24	19.11	18.73	10.40	11.24	22.06	22.43
Hamburg: La Plata . . . . .	7.18	7.14	7.21	7.10	6.97	7.27	9.06	9.77	9.83	n. 10.16
Minneapolis: No 2 . . . . .	10.61	9.18	8.33	7.24	6.43	6.63	6.63	7.42	7.62	8.06
<b>BARLEY</b>										
Braila: Average quality . . . . .	5.18	5.08	4.99	n. q.	6.35	n. q.	8.12	8.77	7.67	7.58
Winnipeg: No 4 Western . . . . .	6.22	4.97	5.61	5.31	4.97	5.32	7.21	7.56	6.83	6.55
Berlin: Home grown fodder . . . . .	20.71	20.51	20.67	20.62	20.07	19.88	20.93	25.14	20.70	22.66
Antwerp: Danubian . . . . .	7.54	7.63	7.39	7.73	7.72	7.70	11.31	11.45	10.39	10.68
London and Liverpool:										
Russian . . . . .	n. q.	n. q.	n. q.	n. q.	7.53	7.89	n. 9.70	n. 10.48	n. 9.21	n. 10.12
No 3 Canadian Western . . . . .	8.47	8.41	8.03	8.09	8.39	9.23	10.40	11.24	10.37	10.99
<b>OATS</b>										
Winnipeg: No 2 White . . . . .	7.24	5.93	6.70	6.87	6.53	6.70	10.54	10.08	8.69	9.37
Chicago: No 2 White . . . . .	9.28	7.95	7.79	6.61	6.02	6.16	7.95	9.86	7.46	10.01
Buenos Aires: Current quality . . . . .	5.31	5.40	5.36	5.46	5.34	5.34	7.28	6.15	6.85	6.36
Berlin: Home grown . . . . .	17.06	16.14	15.56	15.57	14.72	14.00	19.73	21.79	18.17	19.13
Paris: Home grown . . . . .	12.71	13.42	14.08	14.42	15.96	16.24	22.83	17.99	20.36	17.48
London and Liverpool: La Plata . . . . .	7.04	7.17	6.92	7.21	7.05	7.27	9.28	9.20	9.02	9.45
<b>MAIZE</b>										
Braila: Danubian . . . . .	4.68	4.68	4.68	n. q.	5.64	n. q.	5.98	7.66	5.75	6.32
Chicago: No 2 Mixed American . . . . .	7.50	7.55	6.71	5.56	5.02	4.90	6.38	11.63	6.40	10.79
Buenos Aires: Yellow Plate . . . . .	5.08	5.22	5.26	5.49	5.74	5.87	6.16	6.08	6.07	5.95
Antwerp: Danubian . . . . .	6.79	7.01	7.05	7.19	7.54	7.47	n. q.	10.66	n. q.	n. 10.32
London and Liverpool:										
Yellow Plate . . . . .	6.49	6.70	6.68	7.26	7.32	7.53	7.64	8.59	7.63	8.41
No 2 White African . . . . .	n. q.	n. q.	n. q.	7.14	7.26	7.33	n. p.	n. q.	n. 8.00	n. 10.11
Milan: Home grown . . . . .	13.61	13.76	12.38	13.77	14.61	15.30	19.48	14.33	18.14	14.55
<b>RICE</b>										
Milan: Originario . . . . .	27.28	25.73	26.20	25.83	26.28	27.51	32.59	30.17	32.29	28.00
Rangoon: No 2 Burma . . . . .	7.88	7.63	7.34	7.32	7.83	7.99	11.60	11.38	10.85	12.81
Saigon: No 1 Round white . . . . .	9.09	8.26	8.12	8.32	8.65	8.75	11.92	11.21	11.12	13.49
London:										
No 2 Burma . . . . .	11.79	11.03	11.90	11.30	11.92	12.20	15.13	16.75	14.88	18.15
No 1 Saigon . . . . .	12.26	11.32	11.05	11.60	12.32	12.63	15.76	16.55	15.07	18.65
Tokio: Chumai . . . . .	12.83	12.95	12.90	13.27	13.36	13.98	19.03	25.94	17.29	25.96

\*) As gold franc, the Swiss franc, which still represents the franc of the former Latin Monetary Union, has been adopted. In cases where the differences between the rates of exchange of the national currency considered and its parity with the Swiss franc did not during a given month reach 2 ½ %, the monthly average has been reduced on the basis of parity; in the contrary cases the average rate of exchange for the month has been utilized. Finally, when considerable fluctuations in the exchanges in the course of a particular month render it necessary, each weekly quotation has first been reduced to gold francs and the average of these reductions calculated.

PRODUCTS MARKETS AND DESCRIPTION	June	May	April	March	Feb.	January	June	June	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
COTTON										
New Orleans: Middling . . . . .	87.46	84.19	74.65	71.30	69.82	70.16	58.85	101.81	72.45	95.12
Bombay: M. g. Broach f. g. . . . .	76.91	73.86	66.37	68.15	69.16	73.92	62.52	92.08	76.35	89.19
Alexandria: Sakellaridis f. g. f. . . . .	118.61	114.85	106.81	103.46	101.31	106.41	90.35	153.50	107.77	150.31
Liverpool:										
Middling american . . . . .	100.67	96.77	87.41	83.60	81.06	84.09	73.91	114.21	87.30	110.35
M. g. Broach, f. g. . . . .	n. 85.21	n. 82.81	n. 74.39	n. 72.95	n. 74.72	n. 77.85	n. 65.87	n. 92.67	n. 80.72	n. 89.01
Sakellaridis, f. g. f. . . . .	134.18	129.51	120.45	116.71	115.90	118.30	102.57	178.62	120.63	169.99
BEEF										
Berlin: Home grown (live weight) . . .	83.24	73.20	75.33	75.09	75.33	75.83	91.12	114.85	84.73	110.32
Paris: Home grown (dead weight) . . .	108.81	113.68	115.51	116.52	120.58	117.13	149.61	190.01	138.11	187.96
London: Home grown (dead weight) . . .	114.77	116.35	123.10	121.50	124.12	127.89	158.19	208.50	132.41	177.51
MUTTON										
Paris: Home grown (dead weight) . . .	205.03	219.85	253.34	247.25	239.74	219.24	222.08	296.79	214.99	273.36
London: Home grown (dead weight) . . .	153.02	162.06	163.80	160.23	145.99	145.87	149.46	276.56	131.46	228.94
PORK										
Denmark: Home grown (live weight) . .	97.22	105.51	100.65	89.44	73.74	65.11	74.34	105.56	72.86	108.46
Rotterdam: Home grown (live weight) .	66.66	67.70	66.66	65.61	62.49	62.49	62.97	76.03	59.29	88.53
Berlin: Home grown (live weight) . . .	81.26	80.40	83.73	90.16	92.87	87.93	92.84	111.15	99.87	120.20
Paris: Home grown (live weight) . . .	124.24	131.34	131.34	146.97	154.28	151.64	141.90	111.04	132.63	119.94
London Home grown (dead weight) . . .	110.74	122.37	138.36	143.43	134.29	135.88	108.27	185.34	124.26	200.95
BUTTER										
Copenhagen: Danish. . . . .	113.79	116.42	118.08	125.37	140.84	140.45	150.74	266.69	173.71	271.67
Leeuwarden: Dutch. . . . .	108.32	108.32	112.48	110.40	135.39	149.98	232.99	266.62	196.37	279.47
Hamburg: Schleswig-Holstein . . . . .	279.13	263.06	226.89	229.96	233.04	239.99	266.18	304.50	285.57	322.38
London:										
Danish . . . . .	164.82	169.94	166.56	186.17	198.83	197.82	200.63	302.83	219.91	308.28
Argentine . . . . .	138.50	128.67	127.75	136.99	147.37	155.43	186.43	290.42	185.69	273.00
Australian, salted . . . . .	145.83	139.56	126.45	143.32	143.01	150.29	192.05	286.69	188.97	270.51
New Zealand, salted. . . . .	149.29	144.15	130.81	146.14	149.12	151.58	194.70	291.66	196.45	278.17
CHEESE										
Milan: Parmigiano-Reggiano . . . . .	284.29	283.29	279.61	271.32	268.34	268.34	289.38	311.22	270.21	294.16
Alkmaar: Edam 40+ . . . . .	100.82	100.48	84.36	95.40	102.78	105.69	99.46	143.18	101.87	137.43
Kempten: Emmenthal variety . . . . .	174.75	175.20	184.01	184.01	184.01	184.01	203.85	245.76	200.19	240.57
London:										
English Cheddar . . . . .	172.58	167.79	174.41	178.49	181.38	181.55	232.14	258.15	195.43	231.17
Canadian. . . . .	130.30	126.95	123.61	125.94	125.57	125.46	151.17	198.16	130.38	176.49
New Zealand . . . . .	94.63	90.42	80.88	87.12	96.36	96.77	111.24	146.45	112.80	145.34
EGGS (per 100)										
Denmark: Danish for export 1) . . . .	61.89	56.85	40.81	47.49	102.53	98.11	73.10	110.42	96.87	136.27
Roermond: Dutch for export. . . . .	4.52	4.46	4.08	5.50	8.75	7.98	6.51	8.89	8.58	11.10
Warsaw: Polish, average quality . . . .	...	3.45	3.21	4.06	7.75	7.22	4.66	5.32	5.85	6.96

1) Per quintal.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary tables are given below.

### *Percentage variations in the index-numbers for June, 1933.*

COUNTRIES	compared with those for May, 1933		compared with those for June, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 1.1	+ 1.1	+ 7.6	— 3.4
England and Wales . . . . .	— 2.0	—	+ 9.9	—
Argentina . . . . .	+ 3.7	—	+ 0.9	—
Canada . . . . .	+ 2.7	+ 1.0	+ 10.5	+ 1.5
United States . . . . . { a) b)	+ 3.2	+ —	+ 23.1	+ —
Hungary . . . . .	+ 6.0	+ 3.7	+ 16.4	+ 1.7
Italy . . . . .	— 0.0	— 0.0	— 26.7	— 17.7
New Zealand . . . . .	+ 1.5	+ 1.0	— 22.4	— 6.3
Netherlands . . . . .	— 6.4	—	— 0.0	—
Poland . . . . .	— 2.1	—	— 9.6	—
Yugoslavia . . . . . { c) d)	+ 3.5	+ 2.1	— 5.6	— 6.1
	+ 3.0	+ 1.8	+ 15.4	+ 1.8
	+ 4.7		+ 5.1	

a) Bureau of Agricultural Economics — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

### *Quarterly general index-numbers of prices of agricultural products.*

(Base: first quarter of 1929 = 100.)

COUNTRIES	1931			1932				1933	
	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
Germany . . . . .	81.4	77.5	73.0	70.9	70.2	68.2	65.1	61.5	63.3
England and Wales . . . . .	85.4	83.8	79.2	81.2	79.2	72.9	70.1	72.9	70.8
Argentina . . . . .	59.6	59.7	63.4	58.1	56.6	58.4	52.9	50.5	53.7
Canada . . . . .	60.2	55.6	55.8	53.2	50.8	48.9	45.0	44.9	51.5
Estonia . . . . .	63.9	62.8	56.7	52.8	49.3	47.3	50.0	—	—
United States . . . . . { a) b)	63.7	55.4	50.2	44.9	41.2	42.8	39.5	36.8	44.1
Finland . . . . .	63.7	59.3	54.4	48.3	44.5	45.9	43.3	39.7	46.5
Hungary . . . . .	66.7	64.5	67.3	72.6	67.3	67.3	68.2	68.2	—
Italy . . . . .	62.4	64.2	66.4	57.2	62.7	61.4	53.0	53.0	50.0
Netherlands . . . . .	65.1	61.4	62.4	64.5	65.4	60.1	60.0	55.8	50.1
Poland . . . . .	78.2	70.7	61.1	67.9	54.6	53.6	53.6	50.4	50.4
	71.4	63.4	63.3	58.7	63.7	54.4	51.3	53.8	55.0

a) Bureau of Agricultural Economics. — b) Bureau of Labor.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	June	May	April	March	Feb.	Jan.	June	June	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
									1)	
<b>GERMANY</b>										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	100.8	99.4	97.8	99.0	97.0	95.7	118.3	129.8	112.0	119.3
Livestock . . . . .	59.7	59.2	59.9	61.3	60.5	57.9	65.4	81.5	65.5	83.0
Livestock products . . . . .	93.1	93.2	85.3	84.6	88.0	87.5	87.3	103.3	93.9	108.4
Feeding stuffs . . . . .	86.6	84.2	83.4	83.8	81.8	81.9	98.8	114.5	91.6	101.9
Total agricultural products . . . . .	85.1	84.2	81.8	82.5	82.2	80.9	61.1	107.3	91.3	103.8
Fertilizers 2) . . . . .	71.9	71.2	71.9	72.7	73.4	72.6	71.5	77.9	—	76.5
Agricultural dead stock . . . . .	111.4	110.9	111.1	111.2	111.5	112.5	116.0	130.0	116.1	130.7
Finished manufactures (« Konsumgüter ») . . . . .	110.8	109.9	109.2	109.5	110.5	111.4	117.3	141.1	117.5	140.1
Wholesale products in general . . . . .	92.9	91.9	90.7	91.1	91.2	91.0	96.2	112.3	96.5	110.9
<b>ENGLAND AND WALES</b>										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	100	102	105	102	106	107	111	123	109	120
Feeding stuffs . . . . .	85	85	86	90	91	92	94	82	95	83
Fertilizers . . . . .	91	91	90	90	90	90	91	100	90	96
Wholesale products in general 3) . . . .	...	95.2	92.4	90.6	90.6	91.5	90.6	97.2	94.9	97.7
<b>ARGENTINA</b>										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	55.8	54.2	51.7	51.7	52.6	53.8	59.8	54.5	59.5	55.8
Meat . . . . .	64.1	65.0	63.7	64.0	57.7	55.2	73.7	94.0	69.8	94.3
Hides and skins . . . . .	74.8	72.3	53.2	49.9	49.1	54.5	40.4	64.1	53.1	64.5
Wool . . . . .	58.0	49.6	41.9	40.8	40.8	42.1	39.6	54.8	44.2	61.2
Dairy products . . . . .	55.4	48.4	49.4	51.8	52.3	53.9	57.3	74.6	56.9	74.5
Forest products . . . . .	75.7	71.8	71.8	71.8	71.8	70.9	66.3	108.7	68.4	99.3
Total agricultural products . . . . .	58.8	56.7	52.8	52.6	52.4	53.5	58.3	62.9	59.1	63.8
<b>CANADA</b>										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	49.4	46.9	41.1	38.0	36.0	35.1	40.6	46.0	40.7	43.6
Animals and animal products . . . . .	57.9	58.4	56.4	56.0	54.7	57.9	59.3	72.8	60.9	77.6
Total Canadian farm products . . . . .	52.6	51.2	46.8	44.7	43.0	43.6	47.6	56.0	48.3	56.3
Fertilizers . . . . .	73.0	73.0	71.7	72.9	72.9	72.3	72.0	86.7	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	75.0	75.5	74.8	76.0	76.1	76.7	78.6	79.8	78.8	80.0
Wholesale products in general . . . . .	67.6	66.9	65.4	64.4	63.6	63.9	66.6	71.8	67.0	72.1
<b>ESTONIA</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported 4) . . . . .	51	56	54	58	58	58	114	137	113	129
Commodities exported . . . . .	...	...	...	...	...	...	53	79	58	76
Agricultural products imported and exported 4) . . . . .	...	...	...	...	...	...	69	96	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series. — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.



COUNTRIES AND CLASSIFICATIONS	June	May	April	March	Feb.	Jan.	June	June	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
									1)	
<b>UNITED STATES</b> (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	63	62	47	36	34	34	44	67	44	63
Fruits and vegetables . . . . .	74	68	66	60	57	59	82	114	71	98
Meat animals . . . . .	66	65	57	56	53	51	57	91	63	93
Dairy products . . . . .	65	63	59	59	62	68	62	86	70	94
Poultry and eggs . . . . .	55	62	56	54	57	96	59	81	80	96
Cotton and cottonseed . . . . .	69	65	49	48	44	45	37	65	46	63
Total agricultural products . . . . .	64	62	53	50	49	51	52	80	57	80
Commodities purchased by farmers 2) . . . . .	103	100	...	103	104	105	111	130	111	129
Agricultural wages 2) . . . . .	—	—	...	—	—	74	87	123	90	116
<b>UNITED STATES</b> (Bureau of Labor) 1926 = 100.										
Grains . . . . .	57.4	52.8	44.8	36.0	32.7	32.9	37.7	56.0	39.4	53.0
Livestock and poultry . . . . .	46.6	46.8	41.0	43.0	40.1	37.8	46.7	61.9	48.3	63.9
Other farm products . . . . .	56.2	51.8	46.7	45.3	44.2	48.7	48.2	70.8	51.4	69.2
Total agricultural products . . . . .	53.2	50.2	44.5	42.8	40.9	42.6	45.7	65.4	48.2	64.8
Agricultural implements . . . . .	83.0	83.0	83.1	83.1	83.1	84.5	84.9	94.6	84.9	94.0
Fertilizer materials . . . . .	68.0	66.8	62.9	61.9	61.5	62.3	68.0	79.8	66.9	76.8
Mixed fertilizers . . . . .	63.0	63.1	60.0	60.1	62.4	62.7	69.0	82.4	69.4	82.0
Cattle feed . . . . .	55.8	54.4	49.5	47.3	40.6	38.2	42.1	61.1	45.9	62.7
Non-agricultural commodities . . . . .	67.1	65.4	63.7	63.8	63.7	64.9	67.8	71.4	68.4	73.0
Wholesale products in general . . . . .	65.0	62.7	60.4	60.2	59.8	61.0	63.9	70.0	64.9	71.1
<b>FINLAND</b> (Central Bureau of Statistics) 1926 = 100.										
Cereals . . . . .	...	91	90	90	91	89	88	78	90	77
Potatoes . . . . .	...	95	93	93	91	78	73	73	71	68
Fodder . . . . .	...	68	66	67	71	69	70	65	69	63
Meat . . . . .	...	69	68	66	66	63	63	66	61	64
Dairy products . . . . .	...	71	67	67	69	73	68	70	76	76
Total agricultural products . . . . .	...	73	71	72	74	73	71	70	74	72
Wholesale products in general . . . . .	...	88	88	89	89	90	87	83	90	84
<b>HUNGARY</b> (Central Bureau of Statistics) 1913 = 100.										
Agricultural and livestock products . . . . .	66	66	68	71	72	71	90	82	—	—
Wholesale products in general . . . . .	79	79	80	82	83	82	96	91	—	—
<b>ITALY</b> (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.										
National agricultural products . . . . .	268.08	272.28	275.55	289.77	305.65	314.67	345.69	348.32	339.63	343.11
Wholesale products in general . . . . .	284.98	282.24	282.18	287.23	292.64	296.49	304.22	339.33	309.91	341.57
<b>NEW ZEALAND</b> (Census and Statistics Office) Average 1909-13 = 100.										
Dairy produce . . . . .	82.9	77.3	76.4	77.6	83.3	82.7	86.5	87.8	93.8	98.9
Meat . . . . .	108.8	107.5	110.5	111.8	119.2	123.0	113.3	126.3	109.1	130.1
Wool . . . . .	62.6	56.7	64.7	63.0	64.3	61.1	58.4	77.0	61.3	67.9
Other pastoral produce . . . . .	66.7	55.1	55.6	57.6	58.9	59.8	50.9	73.5	62.2	76.7
All pastoral and dairy produce . . . . .	82.5	77.4	79.9	80.5	85.1	85.0	82.7	93.2	86.4	96.5
Field products . . . . .	114.8	113.9	114.9	115.0	107.0	116.4	105.5	114.6	101.7	115.5
Total agricultural products . . . . .	83.4	78.4	80.9	81.4	85.7	85.8	83.4	93.8	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100. — 3) July.

COUNTRIES AND CLASSIFICATIONS	June 1933	May 1933	April 1933	March 1933	Feb. 1933	Jan. 1933	June 1932
<b>NORWAY 1)</b>							
(Kgl. Selskap for Norges Vel)							
Average 1909-14 = 100.							
Cereals . . . . .	116	116	119	119	119	119	125
Potatoes . . . . .	91	84	80	82	81	79	150
Pork . . . . .	81	79	80	86	90	99	84
Other meat . . . . .	115	119	115	113	107	106	108
Eggs . . . . .	60	68	65	76	103	93	67
Dairy products . . . . .	119	119	119	119	118	118	122
Concentrated feeding stuffs . . . . .	94	98	99	100	101	103	104
Maize . . . . .	85	85	85	87	90	89	87
Fertilizers . . . . .	92	92	92	92	92	91	89
<b>NETHERLANDS</b>							
(Bureau of Agriculture)							
Average 1924-25 to 1928-29 = 100.							
Vegetable products . . . . .	36	38	37	40	41	40	49
Animal products . . . . .	50	51	50	48	50	50	53
<i>Total agricultural products . . . . .</i>	<i>47</i>	<i>48</i>	<i>47</i>	<i>46</i>	<i>47</i>	<i>48</i>	<i>52</i>
<i>Agricultural wages . . . . .</i>	<i>74</i>	<i>74</i>	<i>83</i>	<i>83</i>	<i>83</i>	<i>83</i>	<i>83</i>
<i>Wholesale products in general 3) . . .</i>	<i>...</i>	<i>48.7</i>	<i>48.0</i>	<i>48.7</i>	<i>50.1</i>	<i>50.7</i>	<i>52.8</i>
<b>POLAND 4)</b>							
(Central Bureau of Statistics)							
1917 = 100.							
Vegetable products . . . . .	53.4	47.9	50.4	49.8	49.6	46.2	54.6
Worked-up plant products . . . . .	65.2	60.6	63.5	61.7	61.8	54.1	65.7
Total products of plant origin . . . . .	59.4	54.2	56.9	55.8	55.6	48.0	60.3
Animals . . . . .	41.8	42.9	44.6	43.5	40.1	37.3	46.9
Dairy products . . . . .	39.6	42.6	40.5	45.8	47.2	52.8	45.9
Total products of animal origin . . . . .	41.0	42.8	43.0	44.8	43.4	43.8	46.8
<i>Total agricultural products . . . . .</i>	<i>50.7</i>	<i>49.0</i>	<i>50.5</i>	<i>50.7</i>	<i>50.0</i>	<i>46.2</i>	<i>53.7</i>
Fertilizers . . . . .	99.8	94.5	112.9	112.9	112.9	110.8	112.9
<i>Industrial products . . . . .</i>	<i>63.8</i>	<i>63.0</i>	<i>63.1</i>	<i>63.3</i>	<i>64.0</i>	<i>64.7</i>	<i>68.0</i>
<i>Wholesale products in general . . . .</i>	<i>58.0</i>	<i>56.8</i>	<i>57.6</i>	<i>57.9</i>	<i>57.9</i>	<i>56.3</i>	<i>61.8</i>
<b>YUGOSLAVIA</b>							
(National Bank							
of the Kingdom of Yugoslavia)							
1926 = 100.							
Vegetable products . . . . .	61.1	59.3	62.1	61.7	65.5	65.4	72.2
Animal products . . . . .	57.8	55.2	56.2	58.0	60.1	57.2	55.0
<i>Industrial products . . . . .</i>	<i>72.0</i>	<i>71.8</i>	<i>72.7</i>	<i>73.6</i>	<i>73.0</i>	<i>73.0</i>	<i>63.4</i>
<i>Wholesale products in general . . . .</i>	<i>66.1</i>	<i>64.9</i>	<i>66.3</i>	<i>67.8</i>	<i>68.4</i>	<i>67.6</i>	<i>64.9</i>

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932

## RATES OF FREIGHT

(Rates for entire cargoes)

(Rates for entire cargoes)

Year			VOYAGES	14	7	30	23	AVERAGE				Commercial Season		
June	1931	1932		July	July	June	June	June	July	July	1931	1931-32	1930-31	
1931				1933	1933	1933	1933	1933	1933	1932	1931			
SHIPMENTS OF WHEAT AND MAIZE.														
108	120	125	Danube to Antwerp/Hamburg . . .	(shill. per	13/6	13/6	13/6	13/6	13/4 <sup>1</sup> <sub>4</sub>	n. 13/6	13/6	14/6	13/11	
165	101	130	Black Sea to Antwerp/Hamburg . .	(long ton)	10/3	10/3	n. q.	10/3	9/11	n. 9/4 <sup>1</sup> <sub>2</sub>	10/3	10/10	10/10	
76	91	96	St. John to Liverpool 1) . . . . .		n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7	1/6	
153	109	218	Port Churchill to United Kingdom .		n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	—	—	
77	93	108	Montreal to United Kingdom . . . .	(shill. per	n. q.	n. q.	1/3	1/3	1/4	<sup>1</sup> 0.06	1/7	<sup>1</sup> 0.08	1/10	
126	124	156	Gulf to United Kingdom . . . . . (480 lbs.)		n. q.	<sup>1</sup> 2/-	<sup>1</sup> 2/-	<sup>1</sup> 2/-	<sup>1</sup> 2/-	<sup>1</sup> n. 2/3	2/6	2/6	2/3	
105	104	121	New York to Liverpool 1) . . . . .		1/3	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/6	
87	90	108	Northern Range to U. K./Continent.		n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/9	<sup>1</sup> 0.09	1/9	
96	89	105	North Pacific to United Kingdom (sh. per long ton)		n. q.	n. q.	n. 17/-	n. 17/-	17/2 <sup>1</sup> <sub>1</sub>	n. q.	21/-	n. 22/2	22/3	
			Vancouver to Yokohama 1) (gold \$ per sh. ton).		2.00	2.00	1.75	1.75	1.75	2.00	2.62	2.30	2.72	
			La Plata Down River, Necoclieu,											
			Bahia Blanca 2) to U. K./Cont.		14/-	13/9	13/6	13/6	13/9	n. 13/2	15/8	16/-	16/4	
			La Plata Up River 3) to U. K./Continent.	(shill. per	16/-	16/-	15/3	15/6	15/6 <sup>1</sup> <sub>6</sub>	14/10	17/3	17/6	18/-	
			Karachi to U. K./Continent 4) . . .	(long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	18/1	n. q.	19/3	
			Western Australia to U. K./Continent . . . . .		22/9	22/9	<sup>1</sup> 21/3	<sup>1</sup> 21/3	n. 21/3	n. 20/10	26/1	26/-	29/8	
SHIPMENTS OF RICE.														
71	42	58	Saigon to Europe . . . . .	(shill. per	23/-	23/-	n. 22/-	n. 22/-	n. 21/10	<sup>1</sup> 21/6	23/6	23/5	24/3	
71	51	57	Burma to U. K./Continent . . . . .	(long ton)	23/-	23/-	23/-	23/-	n. 23/-	n. 19/-	n. q.	n. 23/3	23/9	
71	49	57												
95	81	93												
67.7	77.8	65.7												
n. q. = not quoted, — n. = nominal, — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastina, Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in \$ per 100 lbs. (Actually 10 \$ c. per 100 lbs. are equivalent to 2½ per quarter).														

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastin Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in \$ per 100 lbs. (Actually 10 \$ c. per 100 lbs. are equivalent to 2/5 per quarter).

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES			Exchange rates				Percentage bonus (+) or loss (—)			
			14 July 1933	7 July 1933	30 June 1933	23 June 1933	14 July 1933	7 July 1933	30 June 1933	23 June 1933
62.8	49.8	53.9	Germany: reichsmark . . . . .	123.250	123.500	122.500	122.900	— 0.2	— 0.0	— 0.8
72.9	61.3	65.9	Argentina: paper peso *) . . . . .	130.536	130.312	130.560	131.140	— 40.7	— 40.8	— 40.7
68.1	55.6	60.0	Belgium: belga . . . . .	72.025	72.325	72.525	72.400	— 0.1	+ 0.4	+ 0.6
60.5	43.1	55.8	Canada: dollar *) . . . . .	3.436	3.397	n. q.	n. q.	— 33.7	— 34.5	n. q.
57.5	55.4	68.0	Denmark: crown . . . . .	77.100	77.000	78.100	78.500	— 44.5	— 44.6	— 43.8
59.3	48.2	60.8	Egypt: pound 2) . . . . .	17.240	17.200	17.525	17.575	— 31.6	— 31.8	— 30.5
63.8	52.0	59.7	United Kingdom: pound sterling . . .	17.240	17.200	17.525	17.575	— 31.6	— 31.8	— 30.5
118.5	105.5	120.2	United States: dollar . . . . .	3.600	3.640	4.080	4.150	— 30.5	— 29.8	— 21.3
80.8	69.6	79.7	France: franc . . . . .	20.330	20.225	20.380	20.380	+ 0.1	— 0.4	+ 0.4
73.2	61.6	70.7	Indo-China: piaster 3) . . . . .	89.558	88.205	89.872	90.128	— 1.2	— 2.7	— 0.9
			Hungary: pengő 4) . . . . .	129.732	129.431	131.877	132.399	— 31.4	— 31.6	— 30.3
77.8	67.5	96.7	India: rupee 5) . . . . .	27.350	27.400	27.325	27.125	+ 0.3	+ 0.5	+ 0.2
71.7	56.6	97.7	Italy: lira . . . . .	108.000	106.907	111.425	104.995	— 58.2	— 58.6	— 56.9
			Japan: yen 6) . . . . .	208.550	208.500	207.950	208.100	+ 0.1	+ 0.1	— 0.2
			Netherlands: florin . . . . .	57.650	58.050	58.050	58.050	— 0.8	— 0.2	— 0.2
71.7	66.2	80.2	Poland: zloty . . . . .	3.080	3.080	3.080	3.080	— 0.6	— 0.6	— 0.6
			Rumania: lei . . . . .	89.000	89.250	90.100	90.500	— 35.9	— 35.7	— 35.1
73.8	65.2	88.8	Sweden: crown . . . . .	15.270	15.360	15.410	15.410	— 0.6	0.0	+ 0.4
			Czechoslovakia: crown . . . . .							+ 0.4

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling, 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) or a cross (†) a conversion has been made, the original exchange rates on New York and on London respectively being converted into Swiss francs by means of the U. S. dollar or sterling rates respectively in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly the exchange rate of the latter only is given.

1) Calculated by the Central Bank of the Netherlands. — 2) Provisional.

**RECIPROCAL PARTIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES  
IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)**

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada	Denmark	Egypt	France	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)
Germany . . . . .	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	6.080	0.979	1.362	0.653	4.526	0.478	0.593	2.123	39.825	8.040	1.235
Argentina . . . . .	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	14.326	2.200
Belgium . . . . .	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	0.939	0.145
Canada . . . . .	Dollar	4.198	2.356	35.959	1.000	3.731	26.230	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	33.751	5.183
United States . . . . .																		
Denmark . . . . .	Crown	1.125	0.631	9.637	0.268	1.000	5.422	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	9.045	1.389
Sweden . . . . .																		
Egypt . . . . .	Piastre	0.207	0.116	1.777	0.049	0.184	1.000	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	1.668	0.256
France . . . . .	Franc	0.164	0.092	1.409	0.039	0.146	0.793	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.322	0.203
Indo-China . . . . .	Piastre (2)																	
Great Britain . . . . .	Shilling	1.021	0.573	8.750	0.243	0.908	4.923	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	8.213	1.261
Hungary . . . . .	Pengő	0.724	0.412	6.289	0.175	0.653	3.580	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	5.903	0.905
India . . . . .	Rupee	1.532	0.860	13.125	0.365	1.362	7.384	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	12.319	1.892
Italy . . . . .	Lira	0.221	0.124	1.892	0.053	0.196	1.065	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	1.776	0.273
Japan . . . . .	Yen	2.092	1.174	17.924	0.498	1.860	10.084	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	16.824	2.583
Netherlands . . . . .	Florin	1.687	0.947	14.454	0.402	1.450	8.132	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	13.567	2.083
Poland . . . . .	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	3.786	0.581
Rumania . . . . .	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.202	0.031
Czechoslovakia . . . . .	Crown	0.124	0.070	1.065	0.030	0.111	0.599	0.756	0.122	0.169	0.081	0.563	0.059	0.074	0.264	4.953	1.000	0.154
Former Latin monetary union (3) . . . . .	Gold Franc	0.810	0.455	6.938	0.193	0.720	3.903	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	6.512	1.000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. —  
(2) 1 Gold piastre equals 10 francs. — (3) Data for purpose of comparison.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

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1933

No. 8

## CEREALS

In Europe the dry, warm weather that prevailed throughout July, save for storms at the beginning and end of the month, was generally propitious for the development and ripening of crops, which began the month somewhat backward. The first half of August was also characterized by good insolation and warmth, which favoured ripening of late crops. Harvesting and threshing were carried out without serious hindrance. The favourable conditions during this period are reflected in crop prospects, which are on the whole better than in 1932 as regards quantity and very good as regards quality.

The preliminary estimates of wheat production are now known for 18 countries, representing almost half the total for Europe excluding the U. S. S. R. Amongst these estimates those for Rumania and Hungary involve notable modifications in the forecasts made last month, while the first forecast for England and Wales is almost 40 % larger than that of 1932 due to the extension of area combined with the higher unit-yield. The total of these 18 countries indicates a production 102 millions bushels above that of 1932, which was practically equivalent to the average of the five years 1927-31.

Consequent on the increases in the estimates for Rumania and Hungary the crop in the four Danubian countries as a whole exceeds the very small crop of last year by 114 million bushels and is also somewhat larger than the average. The exportable surplus of these four countries during the season just begun, which was estimated last month at approximately 44 million bushels, is now raised to 55 millions against the 11 millions actually exported in 1932-33.

As regards the other European countries, for which numerical forecasts are not yet available, it is confirmed that France has had a good average crop though one smaller than that of last year, that Italy has had an abundant production about the level of last year's, while Poland and Czechoslovakia have had very good crops. In the Baltic and Scandinavian countries the crop is slightly smaller than that of last year.

## Cereal production.

COUNTRY	BRITISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932	Average
	Thousand centals			Thousand bushels			= 100	= 100
WHEAT								
Germany . . . . .	115,615	110,299	81,594	192,688	183,828	135,987	104.8	141.7
Austria . . . . . w)	7,968	7,132	6,864	13,279	11,886	11,440	111.7	116.1
Belgium . . . . .	8,170	9,226	8,853	13,617	15,376	14,754	88.6	92.1
Bulgaria . . . . .	31,277	30,332	29,474	52,127	50,553	49,123	103.1	106.1
Spain . . . . .	84,834	110,526	84,342	141,387	184,206	140,566	76.8	100.6
Finland . . . . .	897	890	578	1,495	1,483	963	100.9	155.3
England and Wales . .	34,205	24,752	26,844	57,008	41,253	44,740	138.2	127.4
Greece . . . . .	17,148	12,158	7,611	28,580	20,263	11,685	141.0	247.1
Hungary . . . . .	52,459	38,678	48,963	87,430	64,462	81,603	135.6	107.1
Latvia . . . . . w)	2,249	432	1,355	3,748	3,840	2,258	97.6	166.0
Lithuania . . . . .	4,845	4,872	3,686	8,075	8,120	6,143	99.4	131.5
Luxemburg . . . . .	443	2,304	305	739	719	508	102.7	145.5
Malta . . . . .	183	181	175	305	301	291	101.2	104.6
Netherlands . . . . .	8,514	8,217	3,812	14,190	13,694	6,353	103.6	223.4
Portugal . . . . .	8,895	10,883	6,795	14,825	18,138	11,325	81.7	130.9
Rumania . . . . .	65,037	33,322	69,373	108,392	55,536	115,620	195.2	93.7
Switzerland 2) . . . .	3,832	3,241	3,335	6,386	5,402	5,559	118.2	114.9
Yugoslavia . . . . .	54,013	32,067	52,078	90,020	53,444	86,795	168.4	103.7
Totals . . . . .	500,584	439,512	435,437	834,291	732,504	725,713	113.9	115.0
Canada . . . . .	157,800	257,108	251,149	262,995	428,514	418,582	61.4	62.8
United States . . . . . w)	204,213	277,291	372,321	340,355	462,151	620,536	73.6	54.8
Mexico . . . . . s)	95,590	158,808	152,196	159,316	264,680	253,661	60.2	62.8
Totals . . . . .	457,603	513,207	475,666	772,667	1,155,003	1,302,779	121.7	94.9
Korea . . . . .	4,983	4,983	5,194	8,304	8,305	8,657	100.0	95.9
India . . . . .	211,725	202,138	201,824	352,875	336,896	336,373	104.7	104.9
Japan . . . . .	23,597	18,802	18,114	39,328	31,336	30,189	125.5	130.3
Turkey . . . . .	48,502	41,607	48,524	80,835	69,344	80,872	116.6	100.0
Totals . . . . .	288,807	267,530	273,656	481,342	445,881	456,091	108.0	105.5
Algeria . . . . .	16,281	17,542	18,007	27,135	29,236	30,012	92.8	90.4
Egypt . . . . .	23,971	31,552	25,524	39,951	52,586	42,539	76.0	93.9
Eritrea . . . . . s)	54	88	20	90	147	33	61.2	269.2
French Morocco . . . .	15,172	16,782	15,738	25,286	27,970	26,229	90.4	96.4
Tunis . . . . .	5,512	10,472	7,015	9,186	17,453	11,692	52.6	78.6
Totals . . . . .	60,990	76,436	66,304	101,648	127,392	110,505	79.8	92.0
GRAND TOTALS . . . .	1,315,036	1,482,480	1,558,494	2,191,700	2,470,780	2,597,473	88.7	84.4
RYE								
Germany . . . . .	186,049	184,385	166,978	332,231	329,261	298,177	100.9	111.4
Austria . . . . . w)	14,132	13,184	10,727	25,235	23,542	19,156	107.2	131.7
Belgium . . . . .	12,330	13,251	11,904	22,019	23,662	21,257	93.1	103.6
Bulgaria . . . . .	5,494	5,676	5,110	9,811	10,136	9,126	96.8	107.5
Spain . . . . .	12,309	14,507	12,151	21,980	25,905	21,699	84.8	101.3
Finland . . . . .	7,597	7,261	6,719	13,566	12,966	11,998	104.6	113.1
Greece . . . . .	1,825	1,472	920	3,255	2,629	1,643	123.8	198.0
Hungary . . . . .	20,578	16,969	15,283	36,747	30,301	27,291	121.3	134.6
Italy . . . . .	3,626	3,584	3,587	6,475	6,400	6,406	101.2	101.1
Latvia . . . . .	7,889	6,604	5,392	14,087	11,793	9,629	119.5	146.3
Lithuania . . . . .	14,054	11,653	11,584	25,096	20,808	20,686	120.6	121.3
Luxemburg . . . . .	271	278	217	484	496	388	97.7	124.9
Netherlands . . . . .	7,322	7,650	8,756	13,074	13,661	15,636	95.7	83.6
Portugal . . . . .	2,024	3,590	2,610	3,615	6,411	4,660	56.4	77.6
Rumania . . . . .	7,275	5,888	7,428	12,992	10,513	13,264	123.6	97.9
Switzerland . . . . .	827	829	866	1,476	1,481	1,547	99.7	95.4
Totals . . . . .	303,600	296,781	270,232	542,143	529,965	482,563	102.3	112.3
Canada . . . . .	3,896	5,005	7,917	6,958	8,938	14,138	77.8	49.2
United States . . . . .	12,945	22,319	22,608	23,116	39,855	40,371	58.0	57.3
Totals . . . . .	16,841	27,324	30,525	30,074	48,793	54,509	61.6	55.2
Turkey . . . . .	5,512	4,368	5,310	9,842	7,800	9,482	126.2	103.8
Algeria 4) . . . . .	22	15	28	39	27	49	147.5	79.1
GRAND TOTALS . . . .	325,975	328,488	306,095	582,098	586,585	546,603	99.2	106.5

COUNTRY	BRITISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand bushels				
BARLEY								
Germany . . . . .	73,203	70,872	66,774	152,508	147,652	139,115	103.3	109.6
Austria . . . . .	6,246	6,043	5,615	13,012	12,590	11,698	103.4	111.2
Belgium . . . . .	1,859	2,256	1,844	3,872	4,701	3,842	82.4	100.8
Bulgaria . . . . .	6,678	6,769	7,065	13,912	14,102	14,720	98.7	94.5
Spain . . . . .	49,826	63,632	44,731	103,807	132,569	93,192	78.3	111.4
Finland . . . . .	3,186	3,944	3,261	6,637	8,218	6,795	80.8	97.7
England and Wales . .	13,798	17,181	19,663	28,747	35,793	40,965	80.3	70.2
Greece . . . . .	5,089	4,616	3,288	10,601	9,618	6,850	110.2	154.8
Hungary . . . . .	16,535	15,854	12,977	34,448	33,030	27,037	104.3	127.4
Italy . . . . .	4,972	5,538	5,261	10,359	11,537	10,961	89.8	94.5
Luxemburg . . . . .	109	104	123	228	216	256	105.5	89.0
Malta 5) . . . . .	119	129	143	248	269	297	91.9	83.5
Netherlands . . . . .	1,127	1,301	1,933	2,347	2,710	4,027	86.6	58.3
Portugal . . . . .	690	1,151	937	1,438	2,398	1,953	60.0	73.7
Rumania . . . . .	37,734	32,345	41,001	78,615	67,387	85,421	116.7	92.0
Switzerland . . . . .	295	285	270	615	593	562	103.8	109.5
Totals . . . . .	221,466	232,020	214,886	461,394	483,383	447,691	95.5	103.1
Canada . . . . .	3) 37,046	38,771	51,665	3) 77,179	80,773	107,637	95.5	71.7
United States . . . .	75,674	143,976	130,034	157,634	299,950	270,905	52.6	58.2
Totals . . . . .	112,720	182,747	181,699	234,813	380,723	378,542	61.7	62.0
Korea . . . . .	20,979	21,161	18,124	43,708	44,086	37,759	99.1	115.8
Japan . . . . .	34,042	37,316	37,758	70,922	77,744	78,664	91.2	90.2
Turkey . . . . .	28,660	25,679	28,035	59,710	53,499	58,407	111.6	102.2
Totals . . . . .	83,681	84,156	83,917	174,340	175,329	174,830	99.4	99.7
Algeria . . . . .	14,165	14,833	17,277	29,510	30,902	35,995	95.5	82.0
Egypt . . . . .	4,434	5,792	5,340	9,237	12,067	11,126	76.5	83.0
Eritrea . . . . .	419	617	167	873	1,286	347	67.9	251.3
French Morocco . . .	23,060	22,630	21,725	48,042	47,147	45,261	101.9	106.1
Tunis . . . . .	2,646	7,496	4,010	5,512	15,616	8,355	35.3	66.0
Totals . . . . .	44,724	51,368	48,519	93,174	107,018	101,084	87.1	92.2
GRAND TOTALS . . .	462,591	550,291	529,021	963,721	1,146,453	1,102,147	84.1	87.4
OATS								
Germany . . . . .	145,065	146,613	143,683	453,324	458,163	449,005	98.9	101.0
Belgium . . . . .	16,347	16,763	14,894	51,085	52,385	46,544	97.5	109.8
Bulgaria . . . . .	2,815	2,488	2,348	8,798	7,777	7,339	113.1	119.9
Spain . . . . .	13,372	18,309	13,588	41,787	57,215	42,461	73.0	98.4
Finland . . . . .	11,543	14,759	13,291	36,073	46,122	41,535	78.2	86.8
England and Wales . .	26,432	28,022	30,863	82,600	87,570	96,446	94.3	85.6
Greece . . . . .	3,050	2,325	1,615	9,533	7,266	5,048	131.2	188.8
Hungary . . . . .	6,874	6,962	7,021	21,481	21,756	21,940	98.7	97.9
Italy . . . . .	12,184	13,378	13,036	38,076	41,805	40,738	91.1	93.5
Luxemburg . . . . .	1,049	1,018	951	3,279	3,182	2,970	103.1	110.4
Netherlands . . . . .	6,442	6,693	7,165	20,131	20,916	22,392	96.2	89.9
Portugal . . . . .	1,164	2,354	1,937	3,636	7,355	6,052	49.4	60.1
Rumania . . . . .	16,535	14,169	22,199	51,671	44,276	69,372	116.7	74.5
Switzerland . . . . .	761	776	859	2,377	2,425	2,685	98.0	88.5
Totals . . . . .	263,633	274,629	273,450	823,851	858,213	854,527	96.0	96.4
Canada . . . . .	3) 125,237	133,131	130,976	3) 391,366	416,034	409,297	94.1	95.6
United States . . . .	213,358	397,580	379,047	666,745	1,242,437	1,184,522	53.7	56.3
Totals . . . . .	338,595	530,711	510,023	1,058,111	1,658,471	1,593,819	63.8	66.4
Turkey . . . . .	3,748	2,793	2,407	11,712	8,729	7,523	134.2	155.7
Algeria . . . . .	3,042	2,786	4,138	9,507	8,707	12,932	109.2	73.5
French Morocco . . .	668	405	673	2,086	1,267	2,105	164.7	99.1
Tunis . . . . .	551	617	789	1,722	1,929	2,466	89.3	69.8
Totals . . . . .	4,261	3,808	5,600	13,314	11,903	17,503	111.9	76.1
GRAND TOTALS . . .	610,237	811,941	791,480	1,906,988	2,537,316	2,473,372	75.2	77.1

w) Winter wheat. — s) Spring wheat. — 1) Unofficial data. — 2) Including spelt and meslin. — 3) Conjectural estimate based on area and crop condition on August 1. — 4) Oran only; 94 % of total production. — 5) Including meslin.

On the basis of this information it may be expected that the European wheat crop is this year even appreciably larger than that of 1932, which was the largest till then recorded.

In fact, if to the figures for the countries that have already published a first forecast are added the approximations for other countries – based on the areas sown, the probable unit-yield indicated by crop condition at the beginning of August and general information on the results of harvesting and threshing – a figure of 100 million bushels higher than that of 1932 and about 200 million higher than the 1927-31 average is obtained as the total for Europe (excluding the U. S. S. R.) in 1933.

*Wheat production in Europe.*

Year	Area in thousand acres	Production in million bushels	Yield per acre in bushels
1933 (Forecast) . . . . .	76,100	1,587	20.8
1932 . . . . .	75,400	1,488	19.7
1931 . . . . .	75,900	1,436	18.9
1930 . . . . .	73,600	1,361	18.4
1929 . . . . .	70,100	1,449	20.7
1928 . . . . .	71,400	1,409	19.8
1927 . . . . .	71,200	1,274	17.8

The provisional and largely approximate character of this estimate must be emphasized.

This result would appear to be due in small part to an increase in the areas cultivated but especially to the improvement of unit-yields thanks to favourable weather and to better cultural methods.

So large a production in Europe, which absorbs on the average four-fifths of the exports of the surplus-producing countries, cannot fail to influence international demand for wheat in 1933-34, all the more since several European countries with a large consumption will have considerable stocks remaining from the 1932 crop. Though it would be hazardous to formulate estimates on the basis of figures so largely provisional and conjectural, it is hard to believe that the requirements of Europe for wheat this season can exceed 370 million bushels, of which at least 55 millions can be supplied by the European surplus-producing countries themselves so that the demand to be met by shipments from the four great overseas exporters and by the U. S. S. R. should be reduced this year to 315 million bushels against 430 million last year, 529 million in 1931-32 and 566 million in 1930-31.

In contrast to the exceptionally abundant production in European countries, the crop on the other side of the Atlantic is exceptionally small due to the drought which has damaged crops in both the United States and Canada. The estimates formulated at the beginning of August indicate for the wheat crop of the two countries a total of 763 million bushels, 393 millions below that of 1932 and 530 millions below the average of 1927-31. The production of wheat in North America this year just corresponds *grosso modo* to the quantity necessary to meet the internal consumption of the two countries. It is not to be expected,



therefore, that the new crop will add any exportable surplus worthy of mention to the heavy stocks from previous crops that still exist in North America.

The final estimate of the Indian wheat crop shows an increase of about 6 million bushels on the preceding estimate. India may therefore be in a position to make some small export if prices on the international market are encouraging.

No very appreciable modifications have been made in the estimates for North African countries, which generally confirm the smallness of this year's crop.

On the whole, on the basis of the provisional estimates now known for several countries and the general information available for those where numerical estimates are still lacking, crop prospects indicate that the production of the entire northern hemisphere, excluding the U. S. S. R. and China, will be around 2,950-3,000 million bushels, a diminution of 250-300 million on that of 1932.

For the U. S. S. R. official crop results are lacking. Meteorological information and data from private sources concerning crop condition agree in indicating the possibility of a good and perhaps even very good production. The expectations that exports from the U. S. S. R. in the new season may be appreciably larger than the 15 million bushels exported last season appear therefore to be confirmed.

In China also this year's crop is reported to be much larger than the very small one obtained last year.

It is, therefore, probable that for the northern hemisphere as a whole, taking into account the production of the Soviet Union and China, the deficit in 1933 with respect to 1932 will in fact be smaller than the figure of 250-300 million bushels already indicated.

In any case the available information — though still incomplete and provisional — leads to the expectation that, in consequence of the diminution in total production in the northern hemisphere in comparison with that of last year, the carryover from preceding years, which in the exporting countries as a whole, had at the beginning of the 1933-34 season attained the highest figure so far registered, may undergo a reduction during the current season.

*Stocks of old crop wheat on 1st August.*  
(Million bushels)

COUNTRIES	1926	1927	1928	1929	1930	1931	1932	1933
United States 1). . . . .	116	141	152	273	325	352	414	405
Canada 2). . . . .	40	56	92	128	128	140	136	219
Argentina 3). . . . .	48	49	68	102	36	60	39	42
Australia 4). . . . .	12	28	27	29	40	48	33	39
Afloat . . . . .	39	46	45	37	39	38	32	32
TOTAL . . . . .	255	320	384	569	568	638	654	737

1) Stocks on 1st July, including flour in the city mills expressed in terms of grain and including also domestic wheat in store in Canada. — 2) Including domestic wheat in store in the U. S. A. — 3) Quantities exportable on 1st August.

An attempt to indicate more precisely the probable extent of this reduction would be premature, not only because of the provisional character of all the data so far available regarding production in 1933 but also, and to a greater degree, because of the possible influence on the supply and demand situation on the one hand of the actual results of the harvest in the U. S. S. R. and the volume of its exports and on the other of the crop results in the southern hemisphere, particularly in Argentina and Australia, where threshing does not begin until the end of the year.

Concerning these countries it can for the time being only be said that the areas sown to wheat have been diminished by 7.6 % in Argentina and by 4.4 % in Australia in comparison with last year, that in Argentina, where the weather had previously been favourable, the crop has suffered from drought so that its condition at the beginning of the second half of August was only mediocre, and that in Australia in a large part of the wheat area, especially in New South Wales and South Australia, prospects are not satisfactory owing to insufficiency of the rains.

The total production of rye – a crop principally grown in Europe – appears to be almost as large as the very good one of last year

It is probable that the European barley and oats crops will not fully attain the results of 1932 but it is above all due to the poor yields forecast in the United States that a diminution, particularly marked in oats, is to be expected in the total for these two crops.

*Germany* : Ripening was favoured by the hot dry weather that prevailed in the second half of July. At the beginning of August harvesting of winter rye had almost everywhere commenced, winter barley had been largely brought in and partly threshed. Harvesting of spring barley and of wheat in the better exposed areas had also begun. Harvesting of barley and rye was at times rendered difficult by the fact that large areas had been laid. In some parts Württemberg and of Saxony hail and inundation have caused losses.

The area under spelt in 1933 is estimated at about 279,000 acres, a decrease of 1.4 % on that in 1932 and of 6.9 % on the 1927-31 average. Production is expected to be 3,336,000 centals, 2.3 % below that in 1932 and 3.7 % above the average.

*Austria* : In the first ten days of July, rainfall was practically constant ; in the second ten-day period, fine and rather hot weather set in with occasional showers and the remaining ten days began with very hot weather and finished with a considerable fall in temperature. Rainfall for the whole of the month was rather abundant.

Owing to the low temperatures, cereals at the beginning of the month were so backward that at the middle of July cutting was not possible except in very early areas. Owing to the very violent rains much grain was shattered and cutting was interrupted. Hot weather in the last few days of the month, however, accelerated the ripening of late cereals, particularly spring barley and both in eastern lower Austria and Burgenland cutting was hastened. At the end of the month threshing had begun sporadically.

In the cereals table are given the first estimates of production of wheat, rye and barley, all considerably higher than those of last year. Winter wheat has been cut and stored only in the plains. The ears are large and full. The grain is well formed and mealy. The straw is exceptionally abundant and long. Lodging is extensive only in the cultivated areas south of the Danube where cutting has hardly begun. Spring wheat ears are well developed and had begun to ripen in the plains but were only just forming in the mountains at the beginning of August. Winter rye has been cut up to the mid-mountain areas and since the work has been rather prolonged, much rye is still standing. Owing to early lodging grain formation has been partly prejudiced, and some ears have been broken; these deficiencies have been largely compensated for by the density and length of the ears. The straw is very long and extremely abundant.

Spring rye ears are long and fine. In higher areas flowering has only just finished. The straw is extraordinarily long.

Winter barley has already been stored and in many cases threshed. Yields have been very satisfactory. The grain is full and rather large and the straw is extraordinarily abundant. Cutting of spring barley has progressed rapidly after the hot days in the last ten days of July and at the beginning of August had been finished in the plains. The ears are long, full of good grain and of fine colour, promising a good crop. The straw is long, soft and very abundant.

Oats are well developed and promise good grain yields. Ripening had begun at the beginning of August in the earlier areas: The straw is rather long.

*Belgium*: During July the weather was generally fine apart from very violent storms on July 21 accompanied by hail which caused rather considerable damage in places. Cutting of cereals has been rendered difficult owing to almost general lodging. Winter barley has been gathered in good conditions. Yields are irregular; the first threshing results show an average of 22 to 31 cent (48-65 bushels) per acre. The rye harvest has been practically finished under good conditions. The wheat and oat harvests have begun.

The first estimate of production of spelt is 642,000 centals against 665,000 last year and 651,000 on the average for the preceding quinquennium; percentages: 96.4 and 98.5. Corresponding data for mixed grain are as follows: 150,000 centals (258,000 bushels); 123,000 (213,000); 155,000 (267,000); 121.4 % and 96.7 %.

*Bulgaria*: In July rains were frequent. Harvesting was 15 to 20 days in arrear but was in full swing.

*Denmark*: At the beginning of August harvesting was in full swing, that of barley being almost ended and that of rye far advanced, and it was expected that all cereals would have been brought in within a week.

Prospects of winter cereals are better than for spring cereals. The reports of various correspondents indicate that the ears of rye are especially well filled. Wheat, contrary to what was the case last year, has not been attacked by take-all nor to any serious extent by other diseases. As for barley no large production of straw is to be expected but some threshing results show a yield of grain larger than expected taking account of the rapidity of ripening in some localities.

*Estonia*: At the end of June and in the first half of July condition of spring crops was below average in consequence of drought. The rains in the second half of the month improved the situation.

### Area and Crop Condition.

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33		I-VIII-1933			I-VII-1933			I-VIII-1932		
				1931-32 = 100	Aver. = 100	a)	b)	c)	a)	b)	c)	a)	b)	c)
WHEAT.														
w) Winter crop.														
s) Spring crop.														
Germany . . {w)	5,011	4,883	4,009	102.6	125.0	—	—	—	2.5	—	—	—	—	—
{s)	714	752	452	94.9	158.1	—	—	—	2.6	—	—	—	—	—
Austria . . . {w)	515	514	486	100.3	106.0	—	—	—	2.1	—	—	—	2.4	—
{*s)	...	23	25	...	...	2.2	—	—	2.7	—	—	—	2.6	—
Belgium . . . . {w)	366	383	406	95.5	90.0	—	—	—	—	—	—	—	—	—
Bulgaria . . . .	3,002	3,078	2,841	97.6	105.7	110	—	—	110	—	—	—	125	—
*Denmark . . . .	...	245	259	...	...	—	—	95	—	—	—	—	100	—
Spain . . . . .	11,047	11,249	10,880	98.2	101.5	—	—	—	—	—	—	—	—	—
Estonia . . . . .	163	128	82	127.5	199.4	—	—	—	113	—	—	—	103	—
Irish Free State .	52	21	28	243.1	183.1	—	—	—	—	—	—	—	—	—
Finland . . . . .	65	59	41	111.7	160.1	w)109	—	—	w)107	—	—	—	115	—
France 1) . . . {w)	13,130	12,973	12,419	101.2	105.7	—	—	—	—	—	—	—	—	—
{s)	191	283	441	67.5	43.4	—	—	—	—	—	—	—	—	—
England and Wales	1,660	1,288	1,381	128.9	120.2	—	—	—	—	—	—	—	—	—
Scotland . . . .	78	52	56	149.8	139.5	110	—	—	105	—	—	—	—	—
Greece . . . . .	1,732	1,480	1,338	117.1	129.4	—	—	—	—	—	—	—	—	—
Hungary . . . . .	3,936	3,793	4,014	103.8	98.0	—	—	—	—	—	—	—	—	—
Italy 2) . . . . {w)	12,365	12,076	11,938	102.4	103.6	—	—	—	—	—	—	—	—	—
{s)	153	175	194	87.2	78.6	—	—	—	—	—	—	—	—	—
Latvia . . . . .	182	173	120	105.0	151.5	115	—	—	—	—	—	—	110	—
Lithuania . . . .	499	509	436	97.9	114.3	w)113	—	—	w)113	—	—	—	w)123	—
Luxembourg . . .	33	31	28	108.2	117.1	2.0	—	—	2.1	—	—	—	2.1	—
Malta . . . . .	10	10	9	101.0	104.4	—	—	—	—	—	—	—	—	—
Norway . . . . .	31	28	28	110.1	108.2	—	—	s) 99	—	s) 100	—	—	s) 101	—
Netherlands . . .	332	297	150	111.7	221.7	4) 73	—	—	4) 71	—	—	—	4) 75	—
Poland . . . . . {w)	3,706	3,886	3,468	95.4	106.9	4) 3.7	—	—	3.7	—	—	—	4) 3.2	—
{s)	377	380	259	99.2	145.6	4) 3.6	—	—	3.5	—	—	—	4) 3.4	—
Rumania . . . . .	6,919	7,091	7,694	97.6	89.9	e)	—	—	d)	—	—	—	—	—
Sweden 5) . . . {w)	568	544	605	104.4	124.1	f) 3.4	—	—	—	—	—	—	4) 3.6	—
{s)	184	159	...	115.8	...	—	—	—	4) 2.8	—	—	—	4) 3.2	95
Switzerland 6) .	185	181	176	102.1	105.1	103	—	—	—	—	99	—	—	3.1
Czechoslovakia {w)	2,130	1,997	1,866	106.7	114.1	—	—	—	2.4	—	—	—	—	—
{s)	115	95	90	121.1	127.6	—	—	—	2.6	—	—	—	2.6	—
Yugoslavia . . {w)	5,157	5,142	4,940	100.3	104.4	—	—	—	—	—	—	—	—	—
U. S. S. R. . . {w)	28,058	32,337	22,107	86.8	126.9	—	—	—	—	—	—	—	—	—
Total Europe . {m)	74,608	73,710	70,895	101.2	105.3	—	—	—	—	—	—	—	—	—
{n)	102,666	106,047	93,002	96.8	110.4	—	—	—	—	—	—	—	—	—
Argentina . . . .	18,286	19,791	20,505	92.4	89.2	—	—	—	—	—	—	—	—	—
Canada . . . . {w)	7) 559	8) 536	8) 772	104.3	72.4	—	—	—	—	—	90	—	—	—
{s)	9) 25,987	26,646	23,815	97.5	109.1	—	—	57	—	—	77	—	—	—
United States . {w)	7) 26,802	8) 33,656	8) 39,312	79.6	68.2	—	—	—	—	—	57.8	—	88	—
{s)	18,077	21,521	20,307	84.0	89.0	—	—	—	—	—	—	—	—	—
Mexico . . . . .	1,179	1,104	1,321	106.8	89.3	—	—	—	—	—	—	—	—	—
Total America . .	90,890	103,254	106,032	88.0	85.7	—	—	—	—	—	—	—	—	—
India . . . . .	32,992	33,803	32,062	97.6	102.9	—	—	—	—	—	—	—	—	—
Japan . . . . .	1,500	1,247	1,201	120.3	124.9	—	—	—	f)	—	—	—	—	—
Syria and Lebanon	1,177	1,191	1,182	98.8	99.5	—	100	—	—	—	85	—	—	—
Total Asia . . . .	35,669	36,241	34,445	98.4	103.6	—	—	—	—	—	—	—	—	—
Algeria . . . . .	3,815	3,736	3,718	102.1	102.6	—	—	90	—	—	90	—	—	90
Cyrenaica . . . .	13	6	23	234.0	59.7	—	—	—	—	—	—	—	—	—
Egypt . . . . .	1,426	1,762	1,606	80.9	88.8	—	—	—	106	—	—	—	—	—
Eritrea . . . . {s)	9	15	21	58.3	41.5	—	100	—	—	—	—	—	—	—
French Morocco .	3,026	2,713	2,695	111.5	112.3	—	—	—	—	—	—	—	—	—
Tunis . . . . .	1,952	2,392	1,802	81.6	108.4	—	—	75	—	—	70	—	—	—
Total Africa . . .	10,241	10,624	9,865	96.4	103.8	—	—	—	—	—	—	—	—	—
Australia . . . .	14,500	15,171	15,000	95.6	96.7	—	—	—	—	—	—	—	—	—
GRAND TOTAL. {m)	225,908	239,000	236,237	94.5	95.6	—	—	—	—	—	—	—	—	—
{n)	253,966	271,337	258,344	93.6	98.3	—	—	—	—	—	—	—	—	—



COUNTRIES	AREA SOWN					CROP CONDITION (†)												
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33														
				1931-32 = 100	Aver. = 100	I-VIII-1933			I-VII-1933			I-VIII-1932						
						a)	b)	c)	a)	b)	c)	a)	b)	c)				
Thousand acres																		
Argentina . . . . .	1,680	1,520	1,368	110.6	122.8	—	—	—	—	—	—	—	—	—	—	—	—	—
Canada . . . . .	3,646	3,758	4,728	97.0	77.1	—	—	65	—	—	84	—	—	—	—	—	87	
United States . . . . .	10,540	13,213	11,947	79.8	88.2	—	—	45.5	—	—	53.2	—	—	—	—	—	73.6	
Total America . . . . .	15,866	18,491	18,043	85.8	87.9	—	—	—	—	—	—	—	—	—	—	—	—	
Japan . . . . .	1,940	2,107	2,198	92.1	88.2	—	—	—	—	—	—	—	—	—	—	—	—	
Syria and Lebanon . . . . .	739	794	824	98.0	89.6	—	100	—	—	—	85	—	—	—	—	—	85	
Total Asia . . . . .	2,679	2,901	3,022	92.3	88.6	—	—	—	—	—	—	—	—	—	—	—	—	
Algeria . . . . .	3,277	3,339	3,427	98.1	95.6	—	—	90	—	—	90	—	—	—	—	—	75	
Cyrenaica . . . . .	71	49	88	146.0	80.6	—	—	—	—	—	—	—	—	—	—	—	—	
Egypt . . . . .	292	366	359	79.9	81.5	—	—	—	—	102	—	—	—	—	—	—	—	
Eritrea . . . . .	69	99	52	70.0	132.1	—	100	—	—	—	—	—	—	—	—	—	—	
French Morocco . . . . .	3,439	3,298	3,008	104.3	114.3	—	—	—	—	—	—	—	—	—	—	—	—	
Tunis . . . . .	865	1,507	1,197	57.4	72.2	—	—	75	—	—	70	—	—	—	—	—	—	
Total Africa . . . . .	8,013	8,658	8,131	92.6	98.5	—	—	—	—	—	—	—	—	—	—	—	—	
GRAND TOTAL. (m)	51,746	55,945	54,973	92.5	94.1	—	—	—	—	—	—	—	—	—	—	—	—	
(n)	52,457	56,817	55,982	92.3	93.7	—	—	—	—	—	—	—	—	—	—	—	—	
OATS.																		
w) Winter crop																		
s) Spring crop																		
Germany . . . . .	7,863	8,117	8,578	96.9	91.7	—	—	—	2.7	—	—	—	—	—	—	—	—	
Austria . . . . .	784	759	759	100.0	100.0	—	2.0	—	2.4	—	—	—	—	2.3	—	—	—	
Bulgaria . . . . .	306	281	330	108.9	92.9	120	—	—	120	—	—	—	130	—	—	—	—	
Denmark . . . . .	983	977	977	100.0	100.0	—	—	93	—	—	—	—	—	—	—	—	92	
Spain . . . . .	1,599	1,926	1,926	83.0	83.0	—	—	—	—	—	—	—	—	—	—	—	—	
Estonia . . . . .	341	356	357	95.7	95.5	—	—	75	—	—	—	—	105	—	—	—	—	
Irish Free State . . . . .	650	632	645	102.8	100.7	—	—	—	—	—	—	—	—	—	—	—	—	
Finland . . . . .	1,110	1,124	1,106	98.7	100.4	—	—	86	—	—	92	—	—	—	—	—	92	
France 1) . . . . .	2,180	2,123	2,036	102.7	107.1	—	—	—	—	—	—	—	—	—	—	—	—	
(w) 2) . . . . .	6,203	6,295	6,540	98.6	94.9	—	—	—	—	—	—	—	—	—	—	—	—	
(s) 3) . . . . .	1,494	1,580	1,759	94.6	84.9	—	—	—	—	—	—	—	—	—	—	—	—	
England and Wales . . . . .	854	867	872	98.5	97.9	102	—	—	100	—	—	—	—	—	—	—	—	
Scotland . . . . .	324	304	293	106.8	110.8	—	—	—	—	—	—	—	—	—	—	—	—	
Greece . . . . .	572	578	649	99.0	88.2	—	—	—	—	—	—	—	—	—	—	—	—	
Hungary . . . . .	1,095	1,113	1,238	98.4	88.4	—	—	—	—	—	—	—	—	—	—	—	—	
Italy 2) . . . . .	849	922	820	92.0	103.5	110	—	—	106	—	—	—	110	—	—	—	—	
Lithuania . . . . .	69	69	72	100.6	95.0	—	2.0	—	2.1	—	—	—	2.0	—	—	—	—	
Luxembourg . . . . .	235	240	240	100.0	100.0	—	—	90	—	—	92	—	—	—	—	—	98	
Norway . . . . .	337	350	376	96.3	89.8	75	—	—	—	—	68	—	—	—	—	—	66	
Netherlands . . . . .	5,480	5,487	5,224	99.9	104.9	3.5	—	—	3.3	—	—	—	3.5	—	—	—	—	
Poland . . . . .	1,853	1,956	2,655	94.7	69.8	—	—	—	d)	—	—	—	—	—	—	—	—	
Rumania . . . . .	1,579	1,681	1,681	100.0	100.0	—	—	2.8	—	—	—	—	3.1	—	—	—	—	
Sweden . . . . .	40	41	49	98.7	82.2	101	—	—	—	—	97	—	—	—	—	—	98	
Switzerland . . . . .	2,011	2,027	2,078	99.2	96.7	—	—	—	2.8	—	—	—	2.2	—	—	—	—	
Czechoslovakia . . . . .	73	87	—	83.2	—	—	—	—	—	—	—	—	—	—	—	—	—	
Yugoslavia . . . w)	35,230	36,148	37,603	97.5	93.7	—	—	—	—	—	—	—	—	—	—	—	—	
Total Europe . . . . .	3,460	3,652	3,595	94.7	96.2	—	—	—	—	—	—	—	—	—	—	—	—	
Argentina . . . . .	13,576	13,138	12,997	103.3	104.5	—	—	67	—	—	84	—	—	—	—	—	90	
Canada . . . . .	37,023	41,224	39,590	89.8	93.5	—	—	45.7	—	—	49.3	—	—	—	—	—	75.3	
United States . . . . .	54,059	58,014	56,182	93.2	96.2	—	—	—	—	—	—	—	—	—	—	—	—	
Total America . . . . .	28	28	35	101.0	79.2	—	100	—	—	100	—	105	—	—	—	—	—	
Syria and Lebanon . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Algeria . . . . .	521	488	592	106.9	88.1	—	—	90	—	—	90	—	—	—	—	—	—	
French Morocco . . . . .	74	56	83	131.1	88.6	—	—	—	—	—	—	—	—	—	—	—	—	
Tunis . . . . .	74	54	104	136.4	71.0	—	100	—	—	—	80	—	—	—	—	—	—	
Total Africa . . . . .	669	598	779	112.0	85.8	—	—	—	—	—	—	—	—	—	—	—	—	
GRAND TOTAL . . . . .	89,986	94,788	94,599	94.9	95.1	—	—	—	—	—	—	—	—	—	—	—	—	

\* Countries not included in the totals. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U.S.S.R. — n) Including U.S.S.R. — t) See explanation according to the various systems, page 515. — x) Sowings to 1 May. — y) The figures for 1928-29 to 1930-31. — z) About the middle of the previous month. — 1) Provinces of Svealand and Götaland. — 2) Average including spelt and meslin. — 3) Area expected to be harvested. — 4) Area harvested. — 5) Area to be planted according to farmers' intentions. — 6) Winter and spring crops. — 7) Oran only; 94 % of total production. — 8) Barley and meslin.

*Irish Free State* : The month of July was generally fine and warm but rain fell both at the beginning and the end of the month. The weather on the whole was favourable to growth. No damage was reported as due to storms, pests or disease.

*France* : July was hot and dry. The severe heat at the beginning of the month caused blast in the majority of areas and reduced crop prospects of wheat. In the last few days of July and the first days of August storm rains fell, causing laying in some unharvested fields. At that date however, harvesting was everywhere completed so that losses were of practically no importance.

Harvesting is in progress in all regions and is almost at an end in the South, where yields of wheat are exceptionally high, an important matter for hard wheat production. In the Southwest - Garonne valley and Bordelais - threshing proceeds slowly ; the first results, very incomplete, are very irregular but it appears that yields are on the whole appreciably below those of last year. In the large producing areas of the Centre and North the crop also appears distinctly below that of last year though yields are sometimes better than had been expected after the great heat at the beginning of July ; the straw is short but the ears are often quite heavy.

On the whole private estimates agree in placing the decrease at 10-15 % on the production of last year, which would mean a crop of about 150 million centals (300 million bushels). Quality is in a very general way much superior to last year ; specific weight is in some cases very high, particularly in [the South and Southwest

The barley and rye crops also appear good, while that of oats is irregular and appears on the whole small due to the drought.

The final data of the 1932 cereal crops are as follows :

	1932	1931	Average 1926-30	% 1931=100	1932 Aver.=100
Area (thousand acres)					
Wheat . . . . .	13,429	12,840	13,052	104.6	102.9
Meslin . . . . .	205	202	199	101.6	102.9
Rye . . . . .	1,732	1,782	1,892	97.2	91.5
Barley . . . . .	1,779	1,865	1,721	95.4	103.4
Oats . . . . .	8,371	8,564	8,584	97.7	97.5
Buckwheat . . . . .	814	807	831	100.8	98.0

#### Production

Wheat (ooo centals) . . .	200,117	158,473	162,547	126.3	123.1
(ooo bushels) . . .	333,522	264,116	270,906		
Meslin (ooo centals) . . .	2,371	2,051	2,127	115.6	111.5
(ooo bushels) . . .	4,087	3,536	3,667		
Rye (ooo centals) . . .	18,971	16,530	18,253	114.8	103.9
(ooo bushels) . . .	33,876	29,519	32,594		
Barley (ooo centals) . . .	24,008	22,911	23,904	104.8	100.4
(ooo bushels) . . .	50,017	47,732	49,801		
Oats (ooo centals) . . .	106,221	101,213	109,233	104.9	97.2
(ooo bushels) . . .	331,938	316,288	341,352		
Buckwheat (ooo centals) .	8,223	8,143	8,752	101.0	94.0

*Great Britain and Northern Ireland:* In England and Wales the warm and generally dry weather of June was continued during July throughout the country, with periods of hot sunshine and thunder rain causing slight damage in a few districts. The fine weather has resulted in the early maturing of the grain and the condition of crops is generally satisfactory. Owing to the absence of rain some of the spring sown crops are rather short in the straw. Cutting of wheat and oats was mostly well advanced at the end of the month.

The wheat yield per acre, is expected to be  $18 \frac{1}{2}$  cwt. or 1 cwt. more than the average of the ten years 1923-32; barley:  $16 \frac{1}{2}$  cwt. ( $+ \frac{3}{4}$  cwt.); oats:  $15 \frac{3}{4}$  cwt. ( $+ \frac{1}{2}$  cwt.).

In Scotland, dry bright conditions favoured the ripening of cereal crops, which were well forward for the season. An unusually small proportion of the grain has been lodged. Condition of wheat was exceptionally good, that of barley good and that of oats fairly good.

The area of mixed corn in England and Wales is estimated at 104,800 acres compared with 114,400 in 1932 and 123,200 on the average for 1927-1931; percentages: 91.6 and 85.0.

*Hungary:* In the first half of July temperatures were generally variable but subsequently and until the beginning of August were very high. Precipitation was almost everywhere below average.

At the beginning of August harvesting of wheat was almost at an end and the crop was being brought in and threshed; the grain is well developed and full and quality is very good; straw is abundant. Rye is harvested and threshing has begun; while laying occurred in some districts, the grain is generally well developed and of good quality; straw is abundant. The same may be said of barley. Oats have well developed grain but quality is generally average; yields of straw are fairly good.

*Italy:* During July dry weather predominated; harvesting of wheat had been finished with the exception of some mountain areas and threshing had begun actively.

*Latvia:* According to the reports of agricultural correspondents on 1 August an average crop of winter wheat was expected in 34.4 % of the cases, above average in 63.0 % and below average in 2.6 %. The corresponding figures for winter rye were 27.3 %, 70.9 % and 18 %; for winter cereals 45.2 %, 21.3 % and 33.5 %. In the first half of July temperature oscillations were very considerable; in the second half temperature was about normal without any large oscillations. In the first days of July exceptional drought prevailed but the available water was subsequently sufficient. Damage to spring cereals is due mainly to drought. The weather was, however, generally favourable to flowering of winter cereals.

*Lithuania:* During July, the weather conditions favoured the growth of cereals.

*Luxemburg:* The sunny and excessively hot weather in the last decade of July caused premature ripening. The crop is somewhat in advance with respect to a normal year and yield and quality are very satisfactory.

*Norway:* Owing to the warm, dry weather which continued during July, crop condition deteriorated considerably in several districts. At the end of July abundant rains improved the situation but arrived too late to repair the damage caused by the drought.



Harvesting of cereals had begun exceptionally early ; the straw was short owing to lack of rain.

Condition of meslin on 1 August was 93 according to the system of the Institute, against 100 on 1 August 1932.

*Netherlands* : After the drought of June the rains in July favoured development so that crop condition ameliorated excepting that of barley, which remained the same. A good production is expected.

*Poland* : In the first half of July weather was especially favourable to spring cereals, of which condition was rather below that of winter crops. Condition of cereals in general, however, was on 15 July better than average and than on the corresponding date of last year. Hail caused some local damage.

*Rumania* : Rains were plentiful in July. Rust has damaged wheat in some parts of the Old Kingdom and in Bessarabia.

Towards the end of the first ten days of August, threshing of wheat and barley proceeded under favourable conditions. Cutting of oats had been finished in the Danubian plains and nearly finished in the North.

Wheat production is abundant in Bessarabia and in districts of the Sereth plain, normal in Muntenia and mediocre in Altenia.

*Switzerland* : Warm, sunny days in July alternated with moderate precipitation and were exceptionally favourable to the growth of crops.

Ripening of winter cereals, which was checked by bad weather in May and June, progressed rapidly under the influence of the summer temperature. Harvesting of winter rye began at the end of July ; yields were somewhat compromised by lodging before the flowering stage. Winter wheat and spelt promised satisfactory productions ; condition of these crops gives practically no reason for complaint. Warm weather was very favourable to spring sowings ; for oats, in particular, prospects in general improved ; growth is satisfactory and grain formation is good. Spelt production is estimated at 660,000 centals against 586,000 in 1932 and 649,000 on the average for the period 1927-31 ; percentages : 112.8 and 101.9. This production will be obtained from an area of 31,000 acres or about the same as in 1932 but 2.8 % below the average. The area of mixed grain harvested was 13,600 acres, or about the same as in 1932 but 2.7 % above the average ; it will result in a crop of 291,000 centals (502,000 bushels) — 14.5 % larger than that of last year (254,000 ; 438,000) and 12.1 % above the average (260,000 ; 446,000).

*Yugoslavia* : Owing to the frequent rains in June and in the first half of July harvesting was delayed by about two weeks. The second half of July was more favourable. The spread of rust and the prevalence of laying in several parts of the country, favoured by the hot, humid weather has somewhat reduced the forecast of a good crop. The quantities exportable are estimated by the Ministry of Agriculture at 12.9 million bushels.

*U. S. S. R.* : Official information regarding areas sown to the various cereals, crop condition and production forecasts is still lacking. From the Soviet press it appears that the crop is this year from above average to good. At the beginning of August harvesting was in full swing in the south and centre of Ukraina. On 5 August harvesting had been carried out on 21,264,000 acres, 54.9 % of the area occupied by winter and early spring crops, while the quantity threshed was only 9.7 % of that

harvested. In the other districts (Northern Caucasus and central) there is also a great difference between the quantities harvested and those threshed. The Government has done everything possible to accelerate harvesting and avoid the losses that might be caused on the coming of the rains were considerable quantities of cereals to remain in the fields, but the inadequacy of means of transport greatly hindered its efforts.

In the second half of July and the first decade of August the weather was on the whole favourable.

In an ordinance of 10 August the Government, in view of the confirmation of good crops in the central and eastern regions of the Union, obliged the State farms (*soukhhozi*) of these regions to increase their deliveries to the State. The figure now fixed is 23,539,000 centals against the 16,797,000 previously established, an increase of 40 %.

*Argentina* (Telegram of 19 August): Wheat has everywhere suffered from lack of rains and its condition is mediocre. The persistent drought has caused serious damage to oats, barley and rye, of which the condition is bad. Grasshoppers have caused losses in the north.

*Canada* (Telegram of 25 July): In the Prairie Provinces cereal crop prospects are still uncertain and 1933 crops will undoubtedly add to the recent succession of wheat crops that have been very difficult to estimate. The excellent prospects in May were generally blighted by the June drought and there has been further decline during July to date. Condition of the crops varied extremely according to region and local judgments on crops must be carefully weighed by the acreage affected; this renders a total estimate very difficult.

In Manitoba the crops are best in the West, Centre and North. Southern areas suffered severely in June and subsequent rainfall, although more plentiful, was too late for recovery. Growth is well advanced and the harvest will be early. Some cutting will done this week.

In Saskatchewan prospects are decidedly mixed and the ultimate harvest cannot be placed within narrow limits. Crops are still of nearly average promise on some fairly large acreages mostly east of Moosejaw, in the Carrot River Valley and in some northeastern districts. In some southern districts and a large western area the crops have been damaged by drought beyond any possibility of recovery.

In Alberta grain crops are promising principally in the Blindman Valley, in a considerable area round Edmonton and in the Grandepairie district, whereas in nearly the whole of the remainder of the province light crops are anticipated.

Staff inspectors and correspondent's reports would indicate western wheat prospects at about 65 to 70 % of the average. Rye and oats have been severely damaged.

Local showers have been the rule during the week when general rains are the need. Frost further damaged the light crops south of Calgary. Temperatures have been variable but usually moderate.

(Telegram of 1 August): Although, in the Prairie Provinces, beneficial showers had been received in Manitoba, in eastern and northern Saskatchewan and in northern and west-central Alberta, also meagre showers in southern districts of the three provinces, deterioration of grain crops was undoubtedly high. The situation is that the crops in northern Manitoba and east-central and northern Saskatchewan are doing well, while in west-central and northern Alberta they had benefited by recent rains. In southern districts of the three Prairie Provinces poor crops will be reaped on account of the scarcity of rainfall.

In Maritime Provinces crop condition is generally fair. Early crops are promising but rains are needed for late crops. In Quebec rains are generally needed; cereals are fair in many districts in spite of lack of moisture. In Ontario crops are suffering from the most severe drought experienced in many years; with the exception of fall wheat and some early oats and barley, all crops had been hard hit. In most parts of British Columbia rain is also needed although prospects still indicated fair to good crops.

(Telegram of 9 August): During the past two weeks heat and drought combined to cause further damage to crops in areas which had previously suffered from these elements. The damage was chiefly sustained by crops which reached the filling stage during the last few days of July and in the first week of August. It may be stated that with very few exceptions, crops that are now filled have matured without adequate moisture and with consequent damage in respect to both yield and quality. In addition grasshoppers have made further inroads upon crops in southern districts of the Prairie Provinces and in some cases have become so threatening as to cause premature cutting of crops. During the latter part of the past week, moderate to heavy rains fell at many points throughout the West with benefit to late wheat crops, feed crops and pastures.

In Saskatchewan and Alberta there is evidence of frost damage but the full extent of the damage will not be known until threshing is under way.

About half of the crop has been cut in southern Manitoba and threshing has commenced in the earliest districts. Cutting is also under way in Saskatchewan and central and southern areas of Alberta but will not be general for another week.

Crops in northern areas of Saskatchewan and Alberta maintained their condition very well but owing to lateness a distinct frost hazard exists.

(Telegram of 16 August): Despite helpful rains, serious drought still prevailed, from coast to coast. Harvesting weather was almost ideal. In the western producing belt, the weather was hot and dry and the drought area was widening.

The first threshing results showed wide variation from an average of 5 bushels of wheat at Scott, Saskatchewan to 25 bushels at Lacombe, Alberta.

(Telegram of 22 August): Another week of clear, hot weather broken only by local showers has enabled farmers in southern districts to make rapid progress with cutting and threshing and has also rushed crops in northern Saskatchewan and Alberta to maturity so that cutting is expected to be general during the week. Continued drought has damaged late grain crops.

Grasshoppers are still working and sawflies are causing damage in Saskatchewan and south-central Alberta. Two extensive hailstorms are reported during the week.

*United States*: In the week ended on July 27, the crop condition of spring wheat deteriorated further, with more shrivelling in the Pacific Northwest and extended heat and drought damage in Montana and North Dakota resulting in some cutting of the early sown crop. Harvesting and threshing progressed in the South and East. In the following week harvesting and threshing of spring wheat were again favoured by the hot, dry weather but the condition of late sown crops was very poor, especially in Montana. By August 9, the spring wheat harvest was well forward and that of winter wheat had been nearly finished.

According to a telegram of 25 August, wheat threshing had been nearly finished. Work on the land was well forward.

*Palestine*: In Northern Palestine the average failure of the wheat crop is quoted as two thirds of a normal crop while in Southern Palestine it is three quarters. In many

cases the wheat is not fit for sowing next autumn and suitable seed will have to be furnished to cultivators. For barley the failure is estimated at 40 % of the average in the North and 75 % in the South.

*Syria and Lebanon* : Crop condition was on the whole fairly satisfactory in mid-July despite some losses in the South of Syria due to hot winds and drought, in the Government of Latakia, where yields are very irregular due to rust, and in the Lebanon Republic as well as in Jebel Druze, where yields are bad due to very severe drought.

Crop prospects were on the whole average.

*French West Africa* : The wheat crop has been particularly good in the Sudan ; it amounts to 33,000 centals (55,000 bushels) to 44,000 centals (73,000 bushels).

*Algeria* : Harvesting had been nearly finished everywhere and transplanting was in progress. Results were fairly satisfactory in the East, in the department of Constantine. In the department of Algiers the estimates of damage by frost and scirocco at the end of April have been confirmed ; yields are passable ; in the West, the damage so far noted is largest in the department of Oran owing to attacks of rust; yields are large there but often mediocre.

On the whole, the estimate made after threshing is a little lower than the preceding one established in May, especially as regards soft wheat for which the production estimate has been reduced by nearly 10 %, despite a very slight increase in the estimate of area, and is only 4,839,000 centals (8,065,000 bushels) or a little below that of last year and barely above the five year average. For the other cereals, the slight reduction of the production estimate is probably due to the corrections made in the figures of area cultivated.

*French Morocco* : The harvest had been nearly finished at the end of July and threshing was in full swing. Yields are rather irregular but on the whole low; last month's cereal estimate has again been slightly reduced.

Field work recovered actively immediately after harvest ; cereals grown on fallow land are increasing in area.

*Tunis* : Crop condition of cereals improved somewhat during July but although the estimates of production of barley and oats were not changed, that of wheat was reduced by  $\frac{1}{10}$  compared with the June estimate made before the harvest; this reduction is partly the result of a correction made of the estimate of area but chiefly due to a decrease in yield per acre.

*Australia* (Telegram of 15 August) : In the main wheat area of New South Wales germination is irregular and rain is necessary to ensure a satisfactory harvest but otherwise the appearance of the crop is very fair. In Victoria appearance is favourable, in South Australia crop condition has much improved with respect to that of last month while in Western Australia, despite frost and dry weather, the crop looks healthy.

## MAIZE

Maize benefited from the rains of July in Rumania and Yugoslavia, where crop prospects are on the whole favourable : in Bulgaria a fairly good production is expected and in Austria crop condition has improved. Information on crop condition in Italy and France was still fairly satisfactory at the beginning of

August despite some damage by drought in July. In Hungary the inadequacy of the precipitation hindered growth and a crop appreciably below that of last year is expected. Serious damage has been caused in Portugal by drought and it is probable that the crops in Spain have also suffered.

*Production of Maize.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand bushels				
Bulgaria . . . . .	21,746	23,246	16,098	38,833	41,511	28,747	93.5	135.1
Hungary . . . . .	43,358	53,617	34,016	77,425	95,746	60,743	80.9	127.5
Switzerland . . . .	60	62	75	106	110	135	96.4	78.9
United States . . .	1,272,891	1,628,505	1,406,123	2,273,019	2,908,045	2,510,933	78.2	90.5
Turkey . . . . .	9,921	8,267	9,227	17,716	14,762	16,477	120.0	107.5
Algeria 1) . . . . .	54	38	62	96	68	111	142.4	87.1
Eritrea . . . . .	88	66	138	157	118	247	133.3	63.7

1) Oran only.

In the United States the situation toward the end of July was critical due to the lack of moisture; condition of maize at the beginning of August led to the expectation of a crop appreciably smaller than was estimated last month (1). In relation to the quantity obtained in 1932 and the average of the five years 1927-31 the new estimate indicates a production respectively 21.8% and 9.5% smaller. In the first half of August there were rains in various parts of the maize belt; at the middle of the month development of the crop was only mediocre over a large part of the country.

*Austria* : Vegetation is better but has not yet completely made up for the previous delay. In some places weeds are widespread, particularly where subsequent cultivations were not carried out.

*France* : The maize crop has suffered from the July drought; at the end of the month, however, storm rains fell. The appearance of the crop is still satisfactory.

The final production figures for 1932, recently published, are as follows :—

	1932	1931	Average 1926-1930	% 1932 1931 = 100	Aver. = 100
Area (ooo acres) . . . . .	840	855	843	98.2	99.7
Production (ooo centals) . . . . .	9,025	13,789	9,695	65.5	93.1
(ooo bushels) . . . . .	16,116	24,623	17,312		

(1) The production forecast on the basis of crop condition on 1 July was 1,335 million centals (2,384 million bushels). The figure appearing in the last number of the Crop Report was incorrect owing to a misinterpretation of the telegram.

*Hungary*: Development was checked by lack of moisture and in early August appearance was unsatisfactory, with many empty ears.

*Italy*: The maize crop, which in the first fifteen days of July was promising, began in the latter half of the month in some areas to feel the effects of the drought.

*Portugal*: The scarcity of rains throughout July aggravated the effects of the drought that had already been felt at the beginning of the month. Many wells dried up and the flow of others diminished. The maize crop has undergone some damage, especially in elevated areas. Some fields were at the end of the month already lost, some were reaching maturity before proper formation of the grain had occurred and others were still only earing. Crops on moist and irrigated lands fared better but their aspect was not so good as that of previous years' crops at the same date and production will reflect the difference.

### Maize.

COUNTRIES	AREA					CROP CONDITION (†)								
	1933	1932	Average 1927 to 1931	% 1933		I-VIII-1933			I-VII-1933			I-VIII-1932		
				1932	Aver.									
				= 100	= 100									
1,000 acres														
					a)	b)	c)	a)	b)	c)	a)	b)	c)	
Austria . . . . .	...	148	145	...	...	—	3.0	—	—	—	3.4	2.2	—	—
Bulgaria . . . . .	1,705	1,829	1,726	93.2	98.8	140	—	—	140	—	—	140	—	—
France 1) . . . . .	813	782	806	103.9	100.8	—	—	—	68	—	—	—	—	—
Hungary . . . . .	2,862	2,905	2,670	98.5	107.2	—	—	—	—	f)	—	—	—	—
Italy 2) . . . . .	3,181	3,259	3,489	97.6	91.2	—	—	—	—	—	—	—	—	—
Rumania . . . . .	10,873	10,626	11,195	102.3	97.1	e)	—	—	—	f)	—	—	—	—
Switzerland . . . . .	2	3	3	98.7	86.7	—	—	95	—	—	84	—	—	93
Czechoslovakia . . . . .	338	338	349	101.6	96.8	—	—	—	—	—	—	—	—	—
Yugoslavia. . . . .	...	6,488	5,893	...	...	—	—	—	—	—	—	—	—	—
—														
Canada . . . . .	134	130	143	103.1	93.6	—	—	—	—	—	89	—	—	—
United States . . . . .	103,022	107,729	100,519	95.6	102.5	—	—	66.5	—	—	70.2	77.4	—	—
—														
Syria and Lebanon. . . . .	47	61	96	77.1	48.7	—	—	—	—	—	—	—	—	—
—														
Algeria . . . . .	19	20	24	91.9	78.4	—	—	90	—	—	90	—	—	85
Eritrea. . . . .	10	7	18	133.3	56.3	—	—	—	—	—	—	—	—	—

(†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 515. —  
1) Areas sown to and crop conditions on 1 June. — 2) Main crop ("maggengo").

*Rumania*: Towards August 10 the crop condition of maize was in general satisfactory, especially in the Danube plain, where growth was very good. In Transylvania however, the crop has not grown normally everywhere.

*Yugoslavia*: July weather greatly favoured growth and at the beginning of August yields were very promising.

*United States*: On July 27 the maize situation was critical and rains were wanted in a large part of the belt, particularly in the Ohio Valley. In the week ended on 2 August rain was still needed in the maize belt though some beneficial showers fell in the South. On August 9 crop conditions had greatly improved in the eastern section. At the middle of August, the growth of maize was, in a great part, poor.

According to a telegram of 25 August, the maize crop needed rain.

*Palestine*: Maize is generally very poor and large areas are a complete failure.

*Algeria* : The crop is good. In Oran, for instance which in general supplies a little less than half the total and which has this year 8,600 acres out of the 18,500 in all Algeria there should be a production of 54,000 centals (96,500 bushels), 42.4 % of that of 1932 and owing to the decrease in areas 12.9 % below the average of 1927-31.

*Egypt* : Large areas of *slaraki* have been irrigated before the dates fixed and fairly large areas have been devoted to *nili* maize. Germination and growth, favoured by the weather in July, have been satisfactory.

*French Morocco* : Harvesting was beginning at the end of July. The crops have suffered from drought in some parts of the centre (Fès), west (Oudjia) and south (Mar-rakech) but are good.

*Union of South Africa* : The serious fall in the June estimate is due to disappointing threshing results, the full extent of the damage caused by the drought and early frosts being only then generally realized. Not only were there many empty cobs but the grain was generally light and not fully developed.

The new estimate – the fifth – places production for 1932-33 at 17,190,000 centals (30,696,000 bushels), a decrease of 54.8 % on the 38,068,000 (67,979,000) obtained in 1931-32 and of 55.5 % on the 37,811,000 (67,520,000) averaged in the five years ending 1930-31.

## RICE

*Italy* : The second and third decades of June were rainy and overcast with frequent strong winds ; in the first decade of July, however, there was little rain, the sky was clear and temperatures rose. Development of the rice crop was generally good. In the latter part of June and first part of July weeding and transplanting were completed.

In the province of Milan weeding was hindered by the adverse meteorological conditions. In mid-July the crop was reported to be promising in Vercelli, fairly good in Pavia and good in Mantova and Bologna.

At the end July the rice crop was in good growing condition.

*United States* : Rice production in 1933 is estimated at 15,391,000 centals (34,203,000 bushels) against 17,710,000 (39,356,000) in 1932 and 19,776,000 (43,947,000), the average for 1927-31 ; percentages : 86.9 and 77.8.

*Formosa* : Sowings of second crop rice were going well forward. Growth was good and no damage was reported.

Production of rough rice of the first crop this year is estimated at about 15,296,000 centals (33,991,000 bushels) against 16,731,000 (37,180,000) in 1932-33 and 13,090,000 (29,089,000) on the average of the five years ending 1931-32. Percentages : 91.4 and 116.9.

*India* : The monsoon has been strong in Lower Burma. Rainfall, which was fair in the second decade of July, became excessive in the last decade of the month, giving rise to considerable flooding. Toward the end of July, however, and in the first decade of August precipitation sank to normal.

In Bengal rainfall was moderate to heavy in the latter part of July but rather scanty in the early part of August. Transplanting of winter padi was in full swing during this period. Autumn padi was harvested in the latter part of July. In early August prospects of standing crops were considered satisfactory.

In Bihar rainfall was rather small in the last two decades of July and first decade of August, while in Orissa it was on the whole above normal. Transplanting of *aghani* padi and sowing of *bhadoi* padi continued. In mid-July *bhadoi* padi in the districts of Champaran, Darbhanga, Purnea and Monghyr was damaged by rain and floods, while at the end of that month the crops in Patna and Gaya had begun to suffer from insufficiency of rain.

In Madras sowing and transplanting continued in the Circars in July. Rainfall was heavy to moderate. Crop condition at the end of July was fair. In the Central Provinces heavy rains fell in the last two decades of July and the first decade of August. Transplanting made good progress. Precipitation in the United Provinces during the same period was on the whole fair. While some damage through excessive rain occurred in Muzaffarnagar, Bulandshar and Muttra and through floods in Barabanki and Gorakpur, more rain was needed at the end of July in Lucknow, Cawnpore and Benares. On the whole standing crops were at that date doing well. In Bombay rainfall increased from fair in mid-July to excessive in the first decade of August. Due to the somewhat scanty rains the crop in Assam was in the first decade of August suffering from insufficiency of moisture.

*Japan* : Crop condition on 1 August was fairly good, as on 1 July.

*Persia* : In Gilan, the most important rice-producing province, the crop is smaller than normal owing to lack of rains.

*British Malaya* : June was, as usual, fairly dry throughout the country, though in Malacca precipitation was somewhat above normal. Preliminary cultivation in preparation for the new padi season was reported from Kedah and Province Wellesley and the sowing of nurseries commenced in parts of Kiian and in North Perak generally. Similar activities are reported from Malacca. Transplanting was being carried out in Negri Sembilan and the riverine *mukims* of Pahang. In Selangor the short season crop in areas where double cropping is practised, was reported to be making good progress.

*Egypt* : Cultivation of late sefi rice crops has been finished and condition, favoured by the weather, is good.

Weeding, re-sowing and manuring of early and general crops is in progress. Cultivators have found difficulty in irrigating lands at some canal ends and have often needed to use lifting machinery, but the drought has not affected large areas.

*Tanganyika* : Production of rough rice in 1933-34, as estimated on 1 June, will be 32 million pounds. The drought experienced during the plating period adversely affected prospective yields so that the June estimate is lower than that of May. The estimated carryover in the territory from the 1932-33 crop is 2.2 million pounds.

## POTATOES

On the basis of the information at present available regarding potato areas, no considerable changes have taken place in the large potato producing countries compared with last year.



It should, however, be noted that the Netherlands, the largest exporter, has reduced its area by 12.9 % compared with last year and by 10.7 % compared with the average.

### Potatoes.

COUNTRIES	AREA					CROP CONDITION (†)												
	1933	1932	Average 1927 to 1931	% 1933														
				1932 = 100	Aver. = 100	I-VIII-1933			I-VII-1933			I-VIII-1932						
								a)	b)	c)	a)	b)	c)	a)	b)	c)		
Thousand acres																		
Germany. . . (s)	606	624	593	97.1	102.2	2.6	—	—	2.5	—	—	2.8	—	—				
(t)	6,532	6,490	6,388	100.7	102.3	2.5	—	—	2.6	—	—	2.6	—	—				
*Austria . . .	...	511	467	...	...	2.1	—	—	2.4	—	—	2.4	—	—				
Bulgaria . . .	37	37	29	100.0	128.9	150	—	—	150	—	—	150	—	—				
*Denmark . . .	...	172	163	...	...	—	—	93	—	—	1) 97	—	—	96				
Estonia . . .	171	166	165	103.0	103.5	—	—	75	—	—	—	—	—	89				
Irish Free State .	352	348	357	101.3	98.7	—	—	—	—	—	—	—	—	—				
Finland . . .	200	190	176	105.2	113.6	—	—	99	—	—	95	—	—	—				
France 2) . . .	3,419	3,442	3,585	99.3	95.4	—	—	—	71	—	—	—	—	—				
England and Wales	518	504	479	102.8	108.3	—	—	—	—	—	—	—	—	—				
Scotland . . .	153	149	137	103.0	111.3	105	—	—	110	—	—	—	—	—				
Hungary . . .	735	738	674	99.6	109.6	—	—	—	—	—	—	—	—	—				
Italy . . .	987	1,022	871	96.6	113.3	—	—	—	—	—	—	—	—	—				
Lithuania . . .	441	428	356	103.0	123.7	113	—	—	—	—	—	120	—	—				
Luxemburg . . .	41	41	40	99.8	100.3	2.7	—	—	2.3	—	—	2.1	—	—				
Malta . . .	7	7	7	95.6	97.9	—	—	—	—	—	—	—	—	—				
*Norway . . .	...	123	119	...	...	—	—	95	—	—	—	103	—	—				
Netherlands . . .	379	435	425	87.1	89.3	1) 75	—	—	—	1) 68	—	1) 70	—	—				
Poland . . .	6,769	6,709	6,410	100.9	105.6	—	—	—	3.4	—	—	3.5	—	—				
Switzerland . . .	117	115	116	101.9	101.1	1) 3.4	—	99	—	—	93	—	—	89				
Czechoslovakia .	1,835	1,811	1,774	101.3	103.4	—	—	—	2.6	—	—	2.4	—	—				
Canada . . .	525	521	574	100.7	91.5	—	—	—	—	—	95	—	—	—				
United States . .	3,223	3,368	3,208	95.7	100.5	—	—	—	—	—	—	—	—	—				
Syria and Lebanon	15	18	17	84.1	88.0	—	—	—	—	—	—	—	—	—				
Algeria 1) . . .	31	24	26	126.5	120.1	—	—	95	—	100	—	100	—	—				
TOTAL . . .	27,093	27,187	26,407	99.6	102.6	—	—	—	—	—	—	—	—	—				

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 515 —

\*) Countries not included in the total. — s) Early potatoes. — t) Late potatoes. — 1) Middle of the previous month. —

Weather conditions in July and the first two weeks of August did not favour potato crops. In nearly all of the countries prolonged drought has been reported, which was only interrupted in a few countries by rains at the end of July, somewhat improving the situation.

In Austria, Belgium and Denmark, damage by insects and disease was reported.

At present few data are possessed of production this season in the most important producing countries.

In Germany, the early potato crop, representing, however, only about 12 % of the total crop, has given, despite a reduction in area of about 3 %, yields exceeding those of last year and the average by over 7 %.

In the Netherlands, the decrease in production is less marked than the reduction in area and is estimated at 18.4 % of last year's figure and 8.4 % of the average.

Despite the considerable extension of the main crop potato area in Algeria, production is 3.4 % below that of last year but 8.8 % above the average.

In the United States also, production is low, amounting to only 82.1 % of that of last year and 79.7 % of the average.

*Production of potatoes.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932	Average
	Thousand centals			Thousand short tons			= 100	= 100
Germany (1) . . .	66,489	61,789	62,078	110,814	102,980	103,462	107.6	107.1
Bulgaria . . . .	1,698	2,134	1,000	2,829	3,556	1,667	79.6	169.7
Finland . . . . .	20,911	21,680	17,978	34,851	36,133	29,963	96.5	116.3
Hungary . . . . .	52,448	34,336	39,386	87,412	57,226	65,642	152.7	133.2
Luxemburg . . . .	3,977	4,854	4,078	6,628	8,091	6,796	81.9	97.5
Malta . . . . .	451	564	645	752	941	1,075	80.0	70.0
Netherlands . . .	66,183	81,130	72,255	110,303	135,215	120,423	81.6	91.6
Switzerland . . .	16,700	14,438	15,368	27,833	24,063	25,613	115.7	108.7
United States . .	175,601	213,953	220,269	292,668	356,589	367,116	82.1	79.7
Eritrea . . . . .	4	7	4	7	11	7	66.7	107.5

1) Early potatoes.

*Germany*: The hot dry weather in the latter part of July was rather unfavourable and growth slackened. Crop condition at the beginning of August was still, however, considered as generally satisfactory.

*Austria*: In the more low-lying areas early varieties are already lifted; the tubers are sound and of average size but quantitatively not always satisfactory. Late varieties have flowered abundantly and have developed well but are not exempt from fly.

*Belgium*: The crop has still a good aspect despite the very early appearance and rapid spread of *phytophthora*.

*Denmark*: The crop has in general benefited from the rains, but in some districts these were insufficient. Several correspondents report that rot is widespread.

*France*: The potato crop suffered from the July drought but rain fell at the end of the month. The appearance of the crop is still satisfactory.

The final production figures for 1932 published recently, are as follows:

	1932	1931	Average 1926-1930	% 1932	
				1931 = 100	Aver. = 100
Area (ooo acres) . . . .	3,492	3,533	3,589	98.8	97.3
Production (ooo centals) . . .	363,410	359,350	308,759	101.1	117.7
(ooo bushels) . . . .	605,671	598,904	514,588		

*Great Britain and Northern Ireland* : In England and Wales second early potatoes were lifting in good condition although yields in some districts were hardly up to the average. The condition of the main crop was generally satisfactory and little disease was reported. Prospects as regards yields were satisfactory. July weather was mostly dry and rain was needed. In Scotland growth was healthy and little damage was caused by the dry weather, insect pests or disease ; condition was good.

*Hungary* : At the beginning of August potatoes had finished flowering. Foliage was abundant and healthy, but in several regions the crops suffered greatly owing to the dry weather and began to turn yellow. The tubers are healthy and fairly large but rain will be needed to give a production larger than that of large year.

*Italy* : During July the potato crop made normal progress.

*Latvia* : The reports of crop correspondants on 1 August indicate an average crop in 47.4 % cases, above average in 20.0 % and below average in 32.6 %. The greater part of the damage is due to the drought which was particularly severe in the first half of July.

*Luxemburg* : The persistent drought with entire lack of rain throughout July had an unfavourable effect.

*Norway* : The July drought has checked the growth of tubers but late rains have improved the situation.

*Switzerland* : Crop condition of potatoes improved in July. Crop prospects are really good, particularly in the Berne canton and western Switzerland, whereas estimates are less advantageous in the Northeast and Switzerland.

*Canada* : The Canadian potato crop had, on August 16, been reduced in prospects rather generally.

In the week ended on August 22, potatoes were further damaged by the drought.

*Palestine* : The potato crop is much below the average.

*Algeria* : Production of main crop is fairly large due to the extension of this crop especially in Constantine ; yields are, however, rather small. The two departments of Algiers and Oran, which cultivate this year 21,000 out of the total of 39,900 in Algeria, should thus have a production of 827,000 centals (1,378,000 bushels), 3.4 % below that of last year and 8.8 % above the average, though the area has increased with respect to these bases of comparison, by 11.5 % and 15.7 %.

*French Morocco* : The crop is not very large due to drought.

## SUGAR SEASON

The large number of sunny, warm days during July after a relatively wet period, favoured the sugar beet crop in many European countries. The drought, the effects of which began to be evident during the first half of August, has not, so far, damaged crops. In the regions in which rain fell, the situation was naturally better. During this period of the year it is easier for the countries which regularly make analyses of sugar beet, to have a fairly clear idea of crop condi-

tion, as the average weight of the leaves and roots and the average sugar content are known each week. In this Crop Report, as in past years, the publication of the results of these analyses has been initiated.

*Acceage of sugar-beet.*

COUNTRIES	1933 *)	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100
	acres				
Germany. . . . .	680,758	541,025	1,014,242	126	67
Austria . . . . .	109,000	105,500	80,693	103	135
Belgium . . . . .	129,700	132,109	148,720	98	87
Bulgaria . . . . .	27,200	29,700	45,149	92	60
Denmark . . . . .	106,000	93,400	90,842	114	117
Spain . . . . .	200,000	201,488	185,230	98	107
Irish Free State . . . . .	13,600	13,686	13,351	99	102
Finland . . . . .	6,800	5,856	5,283	116	129
France. . . . .	648,686	617,200	644,485	105	101
Great Britain. . . . .	356,000	255,464	244,917	139	145
Hungary. . . . .	105,300	82,124	159,395	128	66
Italy . . . . .	210,640	207,334	267,555	102	79
Latvia . . . . .	32,000	21,323	7,191	151	45
Lithuania . . . . .	8,900	13,141	6,978	68	127
Netherlands . . . . .	116,964	99,271	141,020	118	83
Poland. . . . .	255,800	286,200	498,624	89	51
Rumania. . . . .	98,800	45,420	126,905	218	78
Sweden . . . . .	121,454	100,720	90,593	121	134
Switzerland . . . . .	4,000	3,500	3,390	114	117
Czechoslovakia . . . . .	358,400	360,601	594,327	99	60
Yugoslavia. . . . .	53,047	81,887	124,182	65	43
Total Europe a) . . .	3,643,049	3,296,949	4,493,072	110	81
U. S. S. R. . . . .	3,240,000	3) 3,123,000	2,282,002	104	142
Total Europe b) . . .	6,883,049	6,419,949	6,775,074	107	102
Canada . . . . .	42,000	45,000	48,273	93	87
United States . . . . .	945,000	768,000	708,217	123	133
Total North America . . .	987,000	813,000	756,490	122	131
Japan . . . . .	22,151	24,076	23,567	92	94
Turkey . . . . .	55,708	37,383	21,642	149	257
Total Asia . . .	77,859	61,459	45,209	127	172
GENERAL TOTALS. . . { a)	4,707,908	4,171,408	5,294,771	113	89
{ b)	7,947,908	7,294,408	7,576,773	109	105

\*) Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Average 1929 to 1931. — 2) Year 1931. — 3) Harvested area: sown area was 4,038,000 acres.

During the first half of August, crop condition was good in Germany, where the beet, which looked strong and leafy after the warm weather of July, further improved at the beginning of August as a result of good rains, especially on heavy lands. The weight per root is considerable and sugar content very high.

In France the beet, which had already begun to suffer owing to the July drought, recovered after showers at the end of the third week of August. Weight per root is a little below the average but sugar content is very high.

In Great Britain, in which, according to the most recent estimates, the area cultivated is larger than that forecast at the beginning of the period of growth,

1933-34 Campaign — Analysis of Sugar Beets.

COUNTRIES	Average weight of root			Average weight of leaves			Sugar content			Weight of sugar per root		
	1933	1932	1927 1931	1933	1932	1927 1931	1933	1932	1927 1931	1933	1932	1927 1931
	oz.	oz.	oz.	oz.	oz.	oz.	%	%	%	oz.	oz.	oz.

1st WEEK OF JULY.

Belgium . . . . .	1.0	0.7	1) 2.0	5.6	4.2	1) 9.0	6.7	6.4	1) 6.7	0.1	0.0	1) 0.1
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2nd WEEK OF JULY.

Germany . . . . .	3.8	—	2) 3.3	14.8	—	1) 8.9	0.9	—	2) 11.0	0.3	—	2) 0.4
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3rd WEEK OF JULY.

Germany . . . . .	5.5	—	3) 3.5	18.1	—	3) 10.2	9.9	—	3) 9.8	0.5	—	3) 0.3
Belgium . . . . .	4.1	4.0	3) 4.5	16.3	16.0	3) 13.0	8.8	7.8	3) 9.6	0.4	0.3	3) 0.4

4th WEEK OF JULY.

Germany . . . . .	7.0	6.5	5.2	19.0	16.0	12.5	11.9	10.9	11.8	0.8	0.7	0.6
Denmark . . . . .	11.4	—	—	—	—	—	12.0	—	—	1.4	—	—

LAST WEEK OF JULY.

Belgium . . . . .	8.2	—	—	23.1	—	—	11.0	—	—	0.9	—	—
Czechoslovakia . .	7.0	8.9	4) 8.1	15.7	17.5	4) 12.0	13.9	12.3	4) 14.1	1.0	1.1	4) 1.1

1st WEEK OF AUGUST.

Germany . . . . .	7.8	8.1	7.5	17.8	16.8	14.4	13.3	12.3	12.6	1.0	12.3	12.6
Denmark . . . . .	9.7	—	5) 4.8	14.5	—	5) 9.7	12.1	—	5) 12.0	1.2	—	5) 0.6
France . . . . .	7.9	8.1	5) 7.8	15.8	16.9	5) 16.2	14.1	12.5	5) 11.9	1.1	1.0	5) 0.9
Poland . . . . .	7.1	—	6) 7.9	12.6	—	6) 12.8	13.5	—	6) 12.8	1.0	—	6) 1.0
Czechoslovakia . .	8.3	10.4	9.2	15.9	18.2	13.0	13.9	12.9	14.3	1.2	1.3	1.3

2nd WEEK OF AUGUST.

Germany . . . . .	8.9	10.1	8.8	16.8	18.6	14.5	14.4	13.1	13.7	1.2	1.3	1.2
Denmark . . . . .	17.0	—	6.3	—	—	12.2	13.9	—	12.3	2.4	—	0.8
France . . . . .	8.9	9.8	8.7	15.2	18.9	17.3	15.0	12.0	12.9	1.3	1.2	1.3
Czechoslovakia . .	9.2	11.9	10.7	14.3	18.3	13.5	15.4	13.6	14.8	1.4	1.6	1.6

3rd WEEK OF AUGUST.

Germany . . . . .	10.1	11.4	10.5	16.5	17.7	16.8	15.2	14.4	14.2	1.5	1.6	1.5
Belgium . . . . .	12.9	12.8	13.3	24.7	28.5	23.5	14.0	12.0	13.8	1.8	1.6	1.8
Denmark . . . . .	10.9	—	8.1	14.5	—	13.5	13.9	—	12.9	1.5	—	1.0
France . . . . .	9.9	12.6	10.8	14.5	18.2	7) 17.4	15.4	12.0	13.9	1.5	1.6	1.5
Czechoslovakia . .	10.3	13.7	7) 12.2	13.8	18.0	7) 13.3	16.5	14.9	7) 15.0	1.7	2.1	7) 1.8

1) Average 1927 and 1930. — 2) Year 1930. — 3) Average 1927, 1930 and 1931. — 4) Average 1928 to 1931. — 5) Year 1931. — 6) Average 1929 and 1930. — 7) Average 1927 to 1929 and 1931.

being nearly 50 % above the average of the preceding quinquennium, crop condition is very satisfactory and sugar content high. Towards mid-August, however, the drought was severe and rains were badly needed.

In Czechoslovakia, crop condition was satisfactory. As in Great Britain, the drought was felt in the first days of August but rains subsequently fell, bringing about a fairly considerable improvement. The roots are not very well developed but sugar content is above the average. Account must be taken of the fact that in Czechoslovakia — as the quantity of sugar beet to be delivered to each factory is fixed — a very abundant production of beet would not bring about an increase in sugar production.

### *Sugar Beet.*

COUNTRIES	CROP CONDITION (†)								
	1st August, 1933			1st July, 1933			1st August, 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany . . . . .	2.5	—	—	2.6	—	—	2.5	—	—
Austria . . . . .	2.0	—	—	2.5	—	—	2.5	—	—
Bulgaria . . . . .	110	—	—	110	—	—	—	—	95
Denmark . . . . .	—	100	—	—	z)	98	—	100	—
Scotland . . . . .	105	—	—	—	100	—	—	—	—
Lithuania . . . . .	106	—	—	103	—	—	—	—	—
Netherlands 1)	75	—	—	71	—	—	70	—	—
Poland 1)	—	—	—	—	3.0	—	—	—	—
Switzerland . . . . .	—	100	—	—	—	98	—	—	—
Czechoslovakia . . . . .	—	—	—	2.8	—	—	2.3	—	—

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 431.

1) Middle of preceding month.

Amongst the principal producing countries Poland has been so far little favoured by weather and growth is backward though an appreciable improvement has been noted with respect to the preceding month. Growth in the first decade of August was still irregular but fairly satisfactory.

In Italy crops made good progress; at the beginning of August, in some districts they began to suffer from drought.

In Belgium, Denmark and the Netherlands crop condition after the July rains, promised very good yields.

### *Production of Sugar-beet.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand short tons			%	
Bulgaria . . . . .	4,098	5,291	5,893	205	265	295	77.5	69.5
Hungary . . . . .	20,865	19,717	30,545	1,043	936	1,527	111.5	68.3
Netherlands . . . . .	37,574	34,613	41,192	1,879	1,731	2,060	108.6	91.2
—								
United-States . . . . .	199,100	179,820	157,084	9,955	8,991	7,854	110.7	126.7

The roots were well developed and sugar content high, especially in Denmark. In Belgium the drought at the beginning of August hindered growth in some areas.

In Austria, Hungary and Switzerland the roots were vigorous and leafage was abundant and of good colour. In all three countries a large crop was expected.

In the other European countries the situation was good and disease and insect damage below average.

The hot rainy weather in the first half of July and the subsequent sunny conditions favoured growth in Russia. Despite the prevalence of weeds in several areas and the losses due to fly in others, crop condition was satisfactory as regards leafage, weight of root and sugar content.

In Turkey the factory campaign had already begun in the second half of July.

In the United States, in which the area under sugar-beet had greatly increased with respect to that of last year, crop condition was good.

E. R.

*Germany* : Though the hot dry weather of the last weeks of July somewhat slackened growth crop condition at the beginning of August was still considered satisfactory.

*Austria* : The stand is rather dense and leafy. Fly is prevalent. In Upper Austria the leaves are frequently spotted.

*Belgium* : Sugar beet are growing well. The first analyses made indicate a sugar content approaching that at the same period of last year.

*Denmark* : Crop condition generally improved following on the rains, which in some districts, however, were insufficient.

*France* : The beet suffered from drought in July but storm rain fell at the end of the month. The appearance of the crop is still good.

*Great Britain and Northern Ireland* : In England and Wales, reports on the condition of sugar beet indicate that a good yield is expected and in view of the increased acreage, the total production should be very much greater than last year. July weather was warm and dry with some occasional thunder rain. Crops badly needed more rain. In Scotland crops showed healthy growth and appeared to be only slightly affected by the dry weather. Very little damage had been caused by insect pests or disease and condition was good.

*Hungary* : Production of raw beet sugar is 2,277,000 centals (113,900 short tons) against 2,761,000 (138,000) in 1931-32 and 4,685,000 (234,200) on the average of the five years ending 1930-31. Percentages 82.5 and 48.6.

Sugar beet looked well at the beginning of August. The bulbs were well developed and the foliage abundant but these crops suffered from the dry weather in several districts.

*Italy* : The growth of sugar-beet was good in July ; more moisture was, however, desirable.

*Poland* : The growth of sugar beet is considerably backward owing to rainy, cold weather in the first half of the summer. As weather conditions improved in July, the situation considerably improved and if the weather remains favourable, good yields may be counted upon.

*Switzerland* : Sugar beet everywhere show good growth and a satisfactory crop may be counted upon.

*Antigua* : The factory was expected to complete its campaign about the end of July.

The 1932-33 crop resulted in a production of 538,000 centals (26,900 short tons) against 403,000 (20,200) in 1931-32, an increase of 33 %, and 344,000 (17,200) on the average of the five years ending 1930-31, an increase of 56 %.

*Argentina* : Production of cane-sugar is 7,677,185 centals (383,854 short tons) against 7,638,390 (381,914) in 1931-32 and 8,758,000 (437,919) on the average of the five years ending 1930-31. Percentages 100.5 and 87.7.

*Barbados* : Thanks to the larger area under cane, to the well-distributed and plentiful rainfall and to improved grinding, production in 1932-33 attained 2,643,000 centals (132,200 short tons) against 1,865,000 (93,300) in 1931-32, an increase of 42 %, and 1,316,000 (65,800) on the average of the five years ending 1930-31, an increase of 101 %.

*United States* : Production of sugar cane this year is forecast at 64,100,000 centals (3,205,000 short tons) compared with 67,180,000 (3,359,000) in 1932 and the average (1927-31) of 50,072,000 (2,504,000); relations: 95.4 % of 1932 and 128.0 % of the average.

Cane-sugar production in 1933 is forecast at 3,700,000 centals (185,000 short tons) compared with 4,460,000 (223,000) in 1932 and 2,976,000 (148,800), the average of 1927-1931; percentages: 83.0 and 124.3.

*Trinidad* : By the end of June all the factories save the largest had completed their campaign and the latter finished on 8 July.

Production of sugar in 1932-33 is now estimated at 2,705,000 centals (135,000 short tons).

*St. Lucia* : Plant canes and ratoons were reported as promising in June.

*Formosa* : Growing conditions of the cane planted from last summer to this spring was fairly good.

*India* : The condition of the standing cane in Bihar and Orissa, was reported in mid-July to be good. Rainfall in Bihar was subsequently up to end of the first decade of August, scanty to fair and in Orissa normal to excessive.

(Telegram of 25 August) : The first estimate of the area under sugar-cane in 1933-34 is 3,349,000 acres, 12.3 % above the corresponding figure of last year (2,982,000 acres) and 25.3 % above the average of the corresponding estimates for the five years ending 1931-32 (2,672,000 acres).

*Egypt* : The weather conditions have been favourable to sugar cane crops. Plants are growing satisfactorily and weeding and manuring of late crops are in progress. Irrigation water is adequate.

*Union of South Africa* : Drought continued in June in the Natal sugar belt and the average condition of the crop at the end of the month was 24 % below normal. The cane was withering and hundreds of tons were being rejected daily by the mills.



## VINES

July was extremely variable in Europe as a whole.

In the western Mediterranean basin and throughout France conditions were rather hot and dry, at times excessively dry, as in the southern regions of France Italy and Spain and in Algeria, where at the beginning of August good rains had been necessary for ripening; nevertheless all serious fear of mildew was removed. Peronospora has caused losses practically nowhere save in the northwest of Spain. Though July was rather favourable to vines the quantity of grapes is not very large on the whole owing to the conditions under which the vines developed, flowered and formed fruit; production in this zone, which is by far the most important, appears thus to be average rather than abundant but above that of last year; present conditions give reason to hope for good quality, much better than that of last year.

*Vines.*

COUNTRIES	AREA					CROP CONDITION (†)												
	1933	1932	Average 1927 to 1931	% 1933														
				1932 = 100	Aver. = 100	I-VIII-1933			I-VII-1933			I-VI-1932						
								a)	b)	c)	a)	b)	c)	a)	b)	c)		
1,000 acres																		
Germany. . . . .	206	205	202	100.7	102.1	2.9	—	—	2.8	—	—	2.6	—	—	2.6	—	—	—
Austria s) . . . . .	...	70	77	...	...	2.6	—	—	2.6	—	—	—	—	—	1.8	—	—	—
Bulgaria. . . . .	229	222	208	102.8	100.0	130	—	—	150	—	—	—	—	—	140	—	—	—
France. . . . .	4,042	4,006	3,761	100.9	107.5	—	—	—	—	—	—	—	—	—	—	—	—	—
Luxembourg. . . . .	3	3	3	98.5	90.5	—	—	3.3	—	—	—	3.3	—	—	—	—	—	3.1
Switzerland. . . . .	33	32	33	103.1	99.5	—	—	62	—	—	—	70	—	—	—	—	—	87
Syria and Lebanon	131	130	117	100.4	111.9	...	...	...	—	100	—	—	—	100	—	—	—	—
Algeria. . . . .	929	914	710	101.6	130.8	—	100	—	—	100	—	—	—	—	—	—	—	—
Tunis s) . . . . .	99	99	77	100.0	127.7	120	—	—	120	—	—	120	—	—	120	—	—	—

(†) For the explanation of signs and figures indicating crop condition, see Cereals table and note on page 515. —  
s) Area bearing.

In the Danube basin, in southeastern and central Europe, on the other hand, July was rainy; storms and hail caused losses and, in a general way, the condition of the vines deteriorated.

Commercial activity was reduced in the majority of the important wine centres owing to the restriction of international trade and the prospects of a crop average in quantity and good in quality, being added to the fairly large stocks of rather mediocre wines. Prices tend to fall.

*Germany:* The warm weather of July favoured flowering, which had ended everywhere by the end of the month. Development of the grapes is satisfactory though prospects are not so good as last year. A more frequent appearance of mildew is reported in several localities.

*Austria* : Vines are luxurious and the leaves are well formed but, despite repeated sprayings, grape mildew and powdery vine mildew spread constantly. In the vineyards of the plains and northeastern lower Austria, owing to excessive moisture, some cases of chlorosis are reported and in Styria, some curling. Fruit formation at the beginning of August was still poor but the bunches are relatively large and the grapes numerous. After the long flowering period grape formation was irregular and vine moth had already appeared. Owing to the rapid spreading of weeds it became necessary to hasten field work.

*Bulgaria* : During July the vines were considerably damaged by hail. The preliminary estimate of production of grapes, however, is forecast at 10,494,000 centals against 9,943,000 in 1932 and 6,855,000 on the average for 1927-1931. Percentages : 105.5 and 153.1.

The preliminary forecast of must production is 61,703,000 Imperial gallons (74,100,000 American gallons) against 57,722,000 (69,318,000) in 1932 and the average of 42,503,000 (51,043,000). Percentages: 106.9 and 145.2.

*Spain* : July was generally warm and dry despite some storms which caused only very limited damage; the dry and very hot weather has caused crop losses in some southern vineyards of Andalusia. In contrast to June conditions, July weather was favourable for the vineyards, checking the diffusion of mildew in the regions where it had begun to increase.

The aspect of the vineyards at the end of July was good and in some cases very good in most of the Spanish coastal vineyards - Andalusia - the northern vineyards - old Castille, Léon, Galicia Aragon and Rioja and northeastern Catalonia; crop prospects were good and generally above the average, in any case better than last year, although the quantity of grapes is not often very abundant, fruit formation has not been satisfactory and drought or mildew have caused some local damage.

Vineyards in the Southeast, in the former province of Levant - Alicante, Valencia and Muria - on the contrary, production of which represents about a seventh of the total area of Spain, have been severely attacked by mildew; the aspect of the vineyards there is bad and crop prospects are very mediocre and often greatly below the average.

Mildew has also appeared in some vineyards of New Castille, production of which represents about one sixth of the total for Spain: the aspect of the vineyards there is generally only passable and crop prospects barely average, owing to mildew, pyralid, drought, defective flowering and the extension of phylloxera.

The Spanish crop on the whole promises to be very irregular, as regards both quantity and quality. It seems to be about average as regards quantity, and probably a little larger than that of last year, as far as may be judged at present and unless mildew spreads in regions not yet affected, which is not probable in view of the present weather conditions. In any case the crop will be better than the previous one as regards quality of the grapes.

There still remains in certain regions, a fairly large quantity of low grade wines which are difficult to sell. Home consumption is decreasing; exports to France are rather reduced, whereas those destined to northern Europe have to some extent increased. The wine market has been nearly stagnant apart from some activity resulting from deficient crop prospects in certain regions; prices rather decreased during June and July; at the end of the month, it seemed, however, that they had reached their lowest level and, in the regions where crop prospects are bad, they even show a tendency to rise.

*France* : June and July were on the whole hot and dry ; there were some thunderstorms, sometimes accompanied by hails which caused local damage of small importance for the crop ; hillside vines were beginning to suffer somewhat from drought in some parts of the South but the rains in most of these districts attenuated the bad effects and fears of damage were not yet serious though the need of rain was felt in August at the period of colouring and for the development and ripening of the grapes.

At the beginning of August appearance was good throughout almost the entire area ; fears of cryptogamic disease disappeared with the coming of the dry weather and only in quite exceptional conditions would there be danger of a general infestation ; mildew which was reported in May, remains very limited in extent and oidium damage, though reported here and there, is not serious.

The crop remaining in the ground at the end of spring developed under the best conditions. In all regions quality is excellent.

Quantity is satisfactory in the large producing regions of the South, where the crop is expected to be distinctly below that of last year. In the other regions production already reduced by frost, hail, mildew and still more, especially in the East Centre and East, by insects, particularly vine moth, does not appear very large ; the quantity of grapes remains about the average.

Present appearances give grounds for expecting a crop much above that of last year and probably fairly close to the average, which was 1,238 million Imperial gallons (1,487 million American gallons) in 1927-31 and 1,386 (1,664) million in 1922-26, the decennial mean being 1,304 (1,566) million gallons. Account must be taken in the forecasts of the increase of 7.5 % in vines in bearing, in relation to the average of 1927-31 ; this extension of the vineyards would, at the same yield give a surplus of 70-90 (80-110) million gallons.

The vintage will begin in the last days of August in the South for early stocks.

Greater animation prevails on the markets in consequence of the more liberal offers made by the growers who are anxious to move their stocks in the two months between now and the vintage but as these are mostly composed of low degree wines and the new crop promises to be of excellent quality the trade is little disposed to purchase ; prices have fallen by one-fourth to one-third since the end of June.

The quantity subject to consumption taxes somewhat increased in May and June as the retail trade is experiencing the need of restocking but is still for the first nine months of the season, 18 (21) million gallons below that of last year and practically the same as in 1930-31. The increase is reflected not so much in a greater volume of purchases on the holding, of which the total remains very small and even below that in 1930-31, as in a slight diminution in commercial stocks.

If it is granted, as there are grounds for believing, that family consumption free of tax, while remaining relatively large, is below that of last season, it may be calculated that on 1 July last there remained 242 (291) to 264 (317) million gallons in the hands of growers and available for the trade in the last three months of the season. In the same period commercial absorption should be about 264 (317) millions, if not more, of this total while Algeria may supply 55 (66) to 66 (79) millions ; contingent imports can scarcely be more than 17,600,000 (21,100,000) gallons. There should therefore be about 176 (211) to 198 (238) million gallons to be deducted from the national supplies, which on 1 July were 495 (594) to 517 (621) million gallons, including commercial stocks. Total stocks remaining at the end of the season both on the holdings and in the trade should thus be at the most equal to those of last year and probably 20 (25) to 45 (55) million gallons less. Otherwise, household consumption must be heavily reduced, which does not seem very probable.

*Hungary* : Thanks to the very favourable weather at the beginning of August. growth was very vigorous. Grape mildew is rather widespread on some areas but oïdium is only sporadic. Pyralis has not caused serious damage save in the Eger district. Preventive measures are everywhere being taken. Seasonal operations are proceeding regularly.

*Italy* : July was a dry, warm month throughout the territory and was very favourable to the vines and fruit formation ; cryptogamic disease, which had appeared in the North and in certain vineyards of the Centre and South was easily and effectively combated with the result that, at the beginning of August, vineyards were everywhere very healthy. Storm rains fell in the last few days of July, giving rise in places to fears of the spreading of mildew, but benefiting the vines, which were beginning to feel the effects of the prolonged drought ; precipitation was, however, local and inadequate in the South except in Apulia and Calabria, where good rains favoured the filling out and ripening of the grapes.

At the beginning of August the vine situation was, on the whole, as satisfactory as might be expected. It permitted the forecast of good quality in all regions but the unfavourable conditions which persisted during the whole of the spring and into June reduced the volume of the crop very much below that of last year and somewhat below the average. The growth of the vines was delayed by about a fortnight and dropping was rather profuse at the flowering stage, in the North and Centre and at the period of fruit formation in the South. The diminution of production compared with last year should be from one-fifth to one-third according to regional forecasts. The coming crop may already be considered as equal to the average of the five-year period 1927-1931, which was rather small - 867 million Imperial gallons (1,041 million American gallons) - the average of 1923-1927 being 955 millions Imperial gallons (1,146 million American gallons) ; it promises, however, to exceed the 1931 crop which amounted to 799 millions (959 millions).

There still remains a fairly large quantity of wines of inferior quality and low degree ; owing to the good quality forecast for the coming crop, the tendency of the trade is to neglect these wines despite generous offers on the part of producers ; quotations have also fluctuated to some extent. The quantity of wines of good quality and normal degree remaining in southern regions is not very large ; holders of these wines are sure, owing to the reduced quantity of the coming crop, to be in a position to sell them and quotations have consequently hardened.

These two contrasting tendencies have checked the activity noted in June ; consumption, moreover, seemed to be reduced in the summer season and exports remained of little importance as the trade agreement with France did not result in large shipments to this country.

*Luxembourg* : The sunny warm days of July had a very good effect on the vines.

*Portugal* : The vines continue to yield abundant quantities of grapes and although, in some regions, fairly severe attacks of cryptogamic disease are reported, the vintage will give results which, as far as may be at present judged, will greatly exceed the normal quantity.

*Rumania* : The vine situation was satisfactory towards August 10, although mildew had appeared.

*Switzerland* : Due to late frosts and to the bad weather of June the vines leave much to be desired in comparison with last year's crop both in regard to present growth

and to prospects. In favoured situations flowering, which had already occurred in June, was compromised and shedding was reported in many districts. As insect pests and mildew are also prevalent only a poor crop is expected. As present the grapes formed in the majority of localities have normal dimensions and good development.

*United States* : Production of grapes this year is estimated at 35,887,000 centals (1,794,000 short tons) against 43,248,000 (2,162,000) in 1932 and the five-year average (1927-31) of 45,667,000 (2,283,000); comparisons: 83.0 % of 1932 and 78.6 % of the average.

*Palestine* : All growth of unirrigated vines in the plains has stopped, owing to the lack of moisture in the soil and desiccating winds blowing during June, and the prospects are poor to fair. A considerable proportion of the bunches were scorched. On the hills the grapes have set very badly. Well cultivated vineyards show better prospects.

*Syria and Lebanon* : Flowering took place everywhere under good conditions. Condition at the end of July was good.

*Algeria* : Trade activity is greatly reduced; there remain barely 77.0 million Imperial gallons (92.5 million American gallons) in producers' hands and trade stocks are also not very high. Quotations have fallen by about 10 % since June in correspondence with the fall noted on the French markets.

July was hot and dry in the centre, hot and humid in the west; on the whole crop condition in mid-July continued to be average (100) though a little less satisfactory than in June.

Drought has hindered development of the grapes, which are abundant; work in the vineyards was carried out under good conditions; anticyptogamic treatments checked an invasion of mildew and oidium; cocheneal insects have also been energetically combated but the third generation of eudemis is expected to appear toward the end of July. Conditions as a whole lead to the expectation that the area of vines will not show any appreciable increase; the crop in Algiers will be practically the same as last year, about 180 million Imperial gallons (215 million American gallons) and about 40 % above the 1927-31 mean of 126 (152) million.

While the condition of the vines in Constantine, though relatively unimportant, appreciably improved in July due to the energetic measures against mildew and oidium, that of the vines in Oran somewhat deteriorated; hot humid winds on the coast led to an invasion of grape mildew, while cocheneal spread in several vineyards; it was expected that, despite the increase in the area bearing, the crop would not exceed that of last year.

On the whole the Algerian crop is practically the same as that of last year, which was 403 (484) million gallons and should exceed the average of 1927-31, 292 (351) millions by over one-third. The crop of table grapes, somewhat affected in some districts by scirocco, has been fairly good. The total area of vines is 929,000 acres, probably a little above that of last year, of which the figure is not known, and 31 % above the 1927-31 average; last year the productive area was 914,000 acres and there are grounds for believing that this year it is 25,000 to 40,000 acres greater.

*Egypt* : The area under vines is estimated at 6,200 acres, of which 5,500 are in bearing. Flowering took place under favourable conditions. Crop condition on 1 August according to the system of the Institute was 76 against 75 on 1 July.

*French Morocco* : Vineyards were on the whole fairly satisfactory at the end of July, despite the drought, some damage caused in the centre by warm winds and fairly serious damage caused by powdery vine mildew in coastal areas. Ripening of early varieties had begun and the first table grapes had appeared on the markets.

*Tunisia* : Weather in July was fairly favourable though hail and cryptogamic diseases caused some slight losses in some areas after the rains of June.

## OLIVES

*Italy* : The growth of olives is good and promises good yields.

*Portugal* : Owing to lack of moisture and the continued violent winds which characterized July, dropping of fruit was extensive. Apart, however, from some centres in which yields are so far estimated to be more or less poor, the others may be expected to give good crops. If these weather conditions persist, however, and the dropping of olives continues, crop results will everywhere be reduced.

*Palestine* : A very general total drop of olive fruit has taken place. This is due to the lack of moisture in the soil and desiccating winds blowing during June. Areas that have received a fair amount of rain, such as Acre, and orchards that are planted in good soil and are well looked after still show fair crops. In general, the Acre-Safad area is fair, Jenin-Nablus is very poor, Jaffa-Ramleh-Gaza is very poor and the Jerusalem area poor to fair according to locality.

*Syria and Lebanon* : Flowering took place under good conditions and crop condition in mid-July was good (100), as in the previous month, against 95 in July 1932.

*Algeria* : The crops have somewhat suffered from drought; shedding has been relatively heavy this month; fruit formation is now at an end. Crop condition remained average (100) at the end of July and a fairly good production was expected.

*Egypt* : Area is estimated at 1,307 acres, of which 670 are in bearing. Flowering took place under favourable conditions. Crop condition on 1 August was 75, according to the system of the Institute, as on 1 July. Production is estimated at 3,763,000 pounds.

*Tunis* : Vegetation is good and crop condition is 120, showing no change since May and having been the same as last year throughout the whole period of growth.

The number of trees in bearing has increased from 11,456,000 last year to 12,299,000, a rise of 7.4 % and, with respect to the five-year average of 11,401,000, of 7.9 %. The total number of trees, which is now 16,613,000 has increased by 0.9 % and 6 % respectively.

## COTTON

The first estimate of the U. S. Department of Agriculture, published on August 8 of probable production in the current season, has surprised the market in the same way as in August 1932 and 1931 and this year private estimates have proved to be below the official estimate based on crop condition on

August 1 which, in contrast to general expectations, is above that of last year and above the average of the last ten years and, with the exception of that of 1931, is the highest recorded since 1925.

In the Atlantic States crops present a very good appearance and are forward; boll weevil activity is less than usual. In the central States, Texas and Oklahoma, conditions are less favourable but remain above the average.

The yield forecast is 198.4 lb. of ginned cotton per acre, which is much above market forecasts. It should be recollected that this yield, owing to the revision of the statistics of area, is not comparable to that of 149.6 lb. last year but should be compared with the final figure of 1932 (173.3 lb.) and the average of 1922-31 (167.4 lb.). It is the highest yield registered since 1914 with the exception of the 1931 yield of 211.5 lb. The high yield forecast may have been due to several factors. It is a fact that much more fertiliser was used than last year and that boll weevil activity is about the same as in 1931, that is, about half of its average extent in recent years. The success of the Government plan for the des-

*Cotton.*

COUNTRIES	AREA SOWN					CROP CONDITION †)								
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933-34		I-VIII-1933			I-VII-1933			I-VIII-1932		
				1932/33 = 100	Aver. = 100									
				Thousand acres					a)	b)	c)	a)	b)	c)
Bulgaria . . . . .	79	20	13	401.3	591.8	130	—	—	130	—	—	150	—	—
U. S. S. R. . . . .	4,858	5,139	3,249	94.5	149.5	—	—	—	—	—	—	—	—	—
United States . . .	1) 29,704	2) 35,939	2) 40,996	82.7	72.5	74.2	—	—	—	—	—	—	65.6	—
India . . . . .	14,031	13,413	15,000	104.6	93.5	—	—	—	—	—	—	—	—	—
Syria and Leb . . .	14	20	51	71.7	28.2	—	100	—	—	100	—	—	—	—
Algeria . . . . .	3)	3)	11	52.6	2.3	—	—	—	—	—	—	—	—	—
Egypt . . . . .	1,873	1,135	1,840	165.0	101.8	—	—	—	—	—	—	—	—	—
Eritrea . . . . .	12	5	1	250.0	195.3	—	—	—	—	—	—	—	—	—

†) For the explanation of signs and figures indicating crop condition, see Cereals table and note on page 515. —

1) Acreage estimate as on 1 August. — 2) Acreage picked. — 3) Area under 500 acres.

truction by farmers of a quarter of the standing cotton crops, has permitted the latter to give more attention to the remaining crops on higher-yielding lands. In fact, while the area in cultivation on July 1, 1933 was estimated at 40,800,000 acres, the area to be harvested as on 1 August, was estimated at only 29,705,000 acres, a reduction of over 27 %, which, on deduction of an average coefficient of abandonment of about 2.5 % gives 25 %, representing the percentage which the Government proposed to have destroyed by the farmers. It is precisely on the basis of the latter figure of 29,705,000 acres, which is the smallest area harvested since 1904 with the exception of 1905 and 1921, that the yield forecast, and consequently production, has been estimated. According to some opinions

it is even probable that the following estimates of production are higher rather than lower than those of August 8, 1933 as farmers who have rented to the Government part of their cotton lands for destruction of the crops, are in a position to spend more on the remaining crops to obtain better yields at more remunerative prices.

The ginning figure of July 31 is exceptionally high. This fact may be explained by the pre-occupation of the textile industry to produce the maximum amount before the entry into force of the new regulations for factory work and the factory taxes. As prices are very remunerative, growers naturally have hastened ginning.

As the Government's estimate is decidedly bearish, market quotations fell sharply, but the activity of demand permitted quotations to rise in a few days. Despite all the elements of doubt and uncertainty as regards the actual effect of the Government plan, the market seems to be prevalently optimistic and shows a tendency to rise. At present, on the basis of the data available, an improvement should take place in the statistical situation of the market, a fact of practical importance.

The Government of India published, on the 15th, the first estimate of cotton production in the season 1933-34, announcing an increase of 4.6 % of the area cultivated compared with last year and a decrease of 6.5 % compared with the average of the five years 1927-28 to 1931-32. This estimate refers to the area sown up to the end of July and at the beginning of August and comprises only 75 % of the total. The crops are in general making good progress under the influence of the monsoon, but the market does not appear to be very active.

The Minister of Agriculture of Egypt has, on August 7, published a table giving details of area under each variety of cotton grown during the current year, with corresponding figures for the four preceding seasons, a summary of which is given below. All of the varieties show increases except *Pilion* and *Nahda* which are in constant regression. *Giza 7* and *Maarad* show considerable progress. The forecasts indicate an abundant production of good quality.

The market is not very active but technically sound. Quotations closely follow the American market and the dollar-sterling exchange.

I. S.

\* \* \*

*Bulgaria*: This year's cotton area is 79,000 acres against 19,700 in 1932 and 13,400 on the average for 1927-1931. Percentages: 401.3 and 591.8.

The preliminary estimate of production of ginned cotton is 99,000 centals (20,800 bales) against 40,000 (8,400) in 1932 and 17,900 (3,700), the average of 1927-1931. Percentages: 246.9 and 553.6.

*United States*: In the week ended on 27 July the cotton crop made fairly satisfactory progress though too much rain fell in south-central areas and the weather was too dry in some western sections. In the southern half of Texas growth was fair to good.



and there was some improvement in parts of the North-west and West ; deterioration increased on some dry uplands. In Oklahoma growth was mostly fair to very good. Conditions were mostly favourable in the Atlantic States. From Louisiana to Alabama conditions favoured weevil damage. In the subsequent week to 2 August growth of cotton was fairly good. Rainfall was substantial in most areas ; excessive moisture was reported in south-central districts while some western sections needed more. Growth was fair to good in Texas but the western section needed rain. In Oklahoma growth was fair to good though dryness and shedding were reported in places. Damage by flooding, rotting and weevils occurred in south central areas. Fairly favourable weather prevailed in the following week to 9 August ; some light to moderate rain fell in the central-eastern area of the belt. Rather general improvement was noted in most areas of Texas except the eastern counties and the Lower Rio Grande valley. Progress was generally good in Oklahoma owing to the better soil moisture condition. Complaints were made of excessive wetness, weevils and shedding in some other States but conditions were mostly favourable. In the South plants were generally fruiting freely.

At the middle of August, the cotton crop was making good progress.

Production of ginned cotton in 1933-34 is forecast at 58,861,000 centals (12,314,000 bales) of lint against 62,147,000 (13,002,000) in 1932-33 and the average of 70,061,000 (14,657,000). Percentages : 94.7 and 84.6.

The quantity of cotton, not including linters, ginned from the 1933-34 crop to close of business on 31 July amounted to 171,254 running bales (counting round bales as half-bales), against 70,978 in 1932, 7,301 in 1931, 78,188 in 1930 and 86,974 in 1929.

According to a telegram of 25 August the cotton crop was making good progress.

*India* : The areas under cotton in 1933-34 in the Punjab and in Madras are as follows in comparison with the corresponding figures for last season and the five-year average.

	1933-34	1932-33	Average 1927-28/ 1931-32	% 1932-33 = 100	% 1933/34 Average = 100
	Thousand acres				
Punjab . . . . .	2,297	1,955	2,238	117.5	102.6
Madras . . . . .	176	211	218	83.8	81.0

In the Punjab sowing began at the normal date and was completed by mid-July. Rainfall since then and up to the first decade of August has on the whole been normal.

*Turkey* : Production of lint in 1933-34 is estimated at 89,800 centals (18,800 bales) 66.5 % of that in 1932-33, which was 135,000 (28,200) and only 21.7 % of the average for the five years ending 1931-32, which was 413,200 (86,500).

*Egypt* : In July weather was favourable. Toward the end of the month growth had been completed in the south of the Delta, and boll formation was making progress; condition had appreciably ameliorated especially in the north of the Delta. Egg-masses of cotton worm are more numerous than in previous years but countermeasures have been taken ; it is not possible to determine the losses. In the north hoeing and fertilizing of late crops has been completed. In Lower Egypt irrigation water has been hardly sufficient, especially at the ends of the canals, due to the extension of rice crops and the irrigation of *sharaki* lands before the authorized date. In the early-sown areas of Upper Egypt the bolls are coming to their full size and entering on maturity.

The areas under the different varieties this year in comparison with previous years are as follows :

According to the official estimates the area cultivated to cotton in 1933-34 is as follows, the data for preceding years being given for comparison :

	1933-34	1932-33	1931-32	1930-31	1929-30
	Thousand acres				
Sakellaridis . . . . .	406	383	497	869	880
Ashmuni and Zagora . . .	1,049	526	788	972	835
Other varieties . . . . .	418	226	463	321	197
Total . . .	<u>1,873</u>	<u>1,135</u>	<u>1,748</u>	<u>2,162</u>	<u>1,912</u>

*French Equatorial Africa* : Production in Oubangui-chari (spring 1933, cotton season 1932-33) was about 176,000 centals of ginned cotton compared with 86,000 last year and the five year average of 32,000 ; ginning yields vary from 30 to 34 % and lint production should amount to about 60,000 centals.

The Chad Territory has this year produced 29,000 centals of raw cotton compared with only about 1,500 in 1928 and 1929.

The total exportable quantity for the 1933-34 season will therefore amount, for the whole of French Equatorial Africa, to about 66,000 centals of cotton or about double that exported in 1932.

The considerable growth of cotton production in French Equatorial Africa is due to the introduction by the Government of a vast program dating from 1929-30, in which year rubber quotations fell so low that latex production was no longer remunerative for the native. Based on close collaboration between the administration of the privileged cotton societies and the native authorities and on a complete technical and economic organization, this program tends to make cotton growing the basis of native agricultural economy in the large areas of Oubangui-Chari and Chad where it is possible. The area cultivated had already passed from about 7,400 acres in the agricultural seasons 1925-26 to 1928-29, to nearly 62,000 acres in 1932 ; it could easily and rapidly be doubled by granting each native 0.2 acre for cotton growing, this acreage to be later increased to 0.5.

The official technicians estimate that the average yield per acre, which was last year 347.2 lb. of raw cotton, might rapidly be increased to 441 lb., then to 661 lb. The production of French Equatorial Africa should therefore, in a few years reach 992,000 centals of raw cotton giving 331,000 centals of cotton lint for export. The program at present being carried out for the coming season should, apart from the advent of unfavourable conditions, result in a production of 331,000 centals of raw cotton in 1934 (cotton season 1934-35).

## FLAX

*Austria* : The crop has developed rapidly but is irregular. Due to the frequent floods it has been laid despite otherwise favourable circumstances.

*Belgium* : The crop is irregular and good fields are somewhat rare. Pulling has terminated here and there. Yields average 5.4 % - 5.8 % pounds per acre.

*Hungary* : Flax is generally low but fairly dense. In many districts retting had already begun in early August. The fibre is very fine.

*Latvia* : According to the reports of agricultural correspondents on 1 August 42.4 % expected an average crop, 17.9 % a crop above average and 39.7 % below average. The largest part of the damage is due to drought, which was especially severe in early July.

*Netherlands* : Production of flax this year is estimated at 7,300,000 lbs. against 3,100,000 in 1932 and 22,500,000 on the average of the five years ending 1931. Percentages 235.7 and 32.3.

### Area and Crop Condition of Flax.

COUNTRIES	AREA SOWN					CROP CONDITION †)										
	1933	1932	Average 1927 to 1931	% 1933												
				1932 = 100	Aver = 100	1-VIII-1933			1-VII-1933			1-VIII-1932				
								a)	b)	c)	a)	b)	c)	a)	b)	c)
1,000 acres							a)	b)	c)	a)	b)	c)	a)	b)	c)	
Germany . . . .	12	11	30	108.1	40.2	—	—	—	—	—	—	—	—	—	—	—
Austria . . . .	...	8	10	...	...	2.5	—	—	2.7	—	—	2.6	—	—	—	—
Bulgaria . . . .	1	1	1	148.5	167.6	110	—	—	110	—	—	150	—	—	—	—
Estonia . . . .	40	36	75	109.1	52.6	—	—	74	—	—	—	—	—	—	90	—
Finland . . . .	10	10	10	102.3	97.1	—	—	—	—	—	—	—	—	—	—	—
France 1) . . . .	28	25	71	111.1	39.7	—	—	—	—	—	—	—	—	—	—	—
Italy . . . . .	20	22	32	90.2	61.1	—	—	—	—	—	—	—	—	—	—	—
Lithuania . . . .	135	106 2)	200	128.1	—	—	—	97	—	100	—	—	—	—	97	—
Netherlands . . .	12	5	33	235.7	34.9	3) 64	—	—	—	—	3) 60	3) 67	—	—	—	—
Poland . . . . .	...	231	279	...	...	—	—	—	—	—	—	—	—	—	—	—
Czechoslovakia .	17	16	40	103.9	42.0	—	—	—	—	—	—	—	—	—	—	—
—																
Argentina . . . .	6,919	7,401	7,448	93.5	92.9	—	—	—	—	—	—	—	—	—	—	—
Canada . . . . .	243	454	489	53.6	49.7	—	—	43	—	—	69	—	—	—	79	—
United States . .	1,755	2,087	2,915	84.1	60.2	—	—	41.1	—	—	53.4	—	—	—	61.3	—
—																
India . . . . .	3,239	3,301	3,123	98.1	103.7	—	—	—	—	—	—	—	—	—	—	—

†) For the explanation of signs and figures indicating crop conditions, see cereals table and note on page 515. — 1) Areas sown to 1 June. — 2) Flax and hemp. — 3) Middle of the previous month.

*U. S. S. R.* : According to the Commissariat for Agriculture on 5 August the fibre crop (*dolgounets*) had been harvested on 18.6 % of the area sown and on an area almost double that harvested last year at the same date. In the northern districts (regions of the North, Ivanovo, Leningrad, Moscow and Gorki) the percentages vary from 30 to 50. In the other districts (Western region, Ural, White Russia and Ukraina) the harvest had just begun.

*Argentina* (Telegram of 19 August) : Persistent drought has caused serious damage to the crop and some slight damage has also been caused by grasshoppers in the North.

*Canada* : According to a telegram of 27 July the flax crop had been severely damaged by the dry weather

*United States* : Production of linseed this year is estimated at 4,366,000 centals (7,797,000 bushels) against 6,631,000 (11,841,000) last year and 10,452,000 (18,664,000), the average for 1927-1931 ; percentages : 65.8 and 41.8.

## HEMP

*Hungary* : Condition is good. Appearance is satisfactory the plants are well developed and the fibre thin. Yields will be fairly good.

*Italy* : During July the growth of hemp was normal.

## HOPS

*Belgium* : Hops treated against disease has a good aspect.

*Great Britain and Northern Ireland* : In England and Wales the weather during July was favourable to the growth of hops. Mildew has been much less prevalent this year and the vines are clean and healthy and have grown well. An average crop is anticipated. The hop area in England and Wales is estimated at 17,000 acres compared with 16,500 in 1932 and 22,000 on the average for 1927-1931 ; percentages: 102.8 and 77.1.

*Hungary* : At the beginning of August, hops were partly in flower ; growth was rather good, but yields were expected to be poor in some districts.

*United States* : Hop production in 1933 is estimated at 35,518,000 lb. compared with 24,120,000 in 1932 and 29,331,000, the average of the quinquennium 1927-1931 ; percentages for 1933 : 147.3 and 121.1.

## TOBACCO

*Belgium* : Growth is good and promises a large crop of high quality.

*Hungary* : At the beginning of August the crop was in several localities rather low and irregular but was generally healthy. Rains were necessary for vigorous growth.

*Italy* : In the first half of July harvesting of the lower leaves began.

*United States* : Tobacco production this year is estimated at 1,299,154,000 lb. against 1,033,330,000 in 1932 and 1,474,688,000 on the average for the years 1927-1931 ; percentages : 125.7 and 88.1.

The total supply of flue-cured tobacco in the United States for the 1933-34 season is estimated at about 1,161 million lb., exceeding the 1932-33 supply by 4 % but falling 13 % below the average for the preceding five seasons. This year's crop is reported, in most districts, to be average or above in quality and appears to be a considerably better crop than that of either of the past two years.

*Japan* : Crop condition on 1 August was average; as on 1 July.

*Persia* : Lack of rain in Gilan has caused somewhat low yields and the coming crop is expected to be below normal.

*Syria and Lebanon* : The area cultivated to tobacco this year will be about 7,200 acres against 11,300 in 1932 and 10,400 on the average of the five years ending 1931. Percentages: 64.0 and 69.7.

*Algeria* : In Algiers plantings, owing the considerable proportion planted late, are irregular; the crop appears mediocre, partly due to the appreciable reduction in area cultivated and partly to the yields rather below normal; it should be about 180,000 centals, 16 % below that of last year and 33 % below the average. In Constantine yields appear better but the area in this department has also been reduced. On the other hand, quality appears to be better than last year owing to the good conditions under which drying was carried out. Oran produces practically no tobacco.

*Eritrea* : Production of tobacco this year will be about 66,000 pounds against 132,000 in 1932 and 31,500 on the average of the five years ending 1931. Percentages: 50 and 210.

*Union of South Africa* : Production this season is now estimated at 10,250,000 pounds, a decrease of 51.4 % on that of 1931-32 and of 39.7 % on the mean of the five years ending 1930-31. The poor crop this season is due chiefly to the drought which prevailed over the main producing areas, especially in Western Transvaal. The production of Turkish tobacco, which is limited to the southwestern districts of the Cape Province, has been deliberately curtailed owing to the overproduction of this type in previous years and is this season negligible.

## OTHER PRODUCTS

### Cacao.

*Trinidad* : By the middle of June the wet season had begun; almost the entire crop had been picked. Witchbroom has been somewhat checked since the beginning of the year. Gros Michel bananas and coffee are being extended on the cacao estates wherever possible. Replacement of cacao by bananas and coffee is also taking place in the Erin district, which suffered especially severely in the recent hurricane. Thanks to increased area having come into bearing there has been a record crop in Tobago.

*St. Lucia* : In June a good crop was expected.

*Gold Coast* : District reports showed that 90 % of the minor crop had ripened by the end of June and it was expected that practically 100 % would have ripened by the end of July. In the Saltpond area, however, owing to wet weather, the crop was maturing later than expected and was estimated to finish in August.

Under the stimulus of rising prices and the need for ready cash picking was in progress in June throughout the cacao areas, farmers being eager to sell and marketing in small quantities as the crop became available. Of the total minor crop 75 % had been harvested and approximately 65 % marketed by the end of the month. The crop was in demand by both brokers and merchants, some 24 million pounds having passed into the latter's hands.

Production of the minor crop was expected to be 38-40 million pounds.

Wet weather had been reported from all districts with the exception of the Winneba area. The prevalence of dull rainy days made drying difficult for both farmers and merchants. Both May and June were wetter than the same months of 1932. Not only the total precipitation but the number of rainy days was greater.

The quality of the cacao exported in May and June was poorer than that in the corresponding months of last year. Reports indicated, however, that an improvement had set in. The marketing of small lots had resulted in underfermented beans being offered for sale. Fire-drying, resulting in smoky or hammy cacao, was reported from several areas, notably Agona Swedru, Jukwa, Elmina and Nsawam; agricultural officers in the districts are continuing propaganda against this method of drying.

The large stock of old main crop previously reported had been considerably reduced and at the end of June amounted to about 78 million pounds, of which 45 million were visible at the ports of Accra, Winneba and Takoradi. Of the 24 million pounds of minor crop that had been bought some two-thirds had been shipped by early July. The export of 36 million pounds in June constituted a record for that month. From 1 October 1932 to 30 June 1933 the total export was 457 million pounds.

The latest figures place the yield of the 1932-33 major crop at 520 million pounds, including cacao received from British Togoland and exported via Gold Coast ports but not cacao passing over the Eastern Frontier into French Territory, which is shown by customs data to be 12 million pounds for the period from 1 October to 30 May, British Togoland production thus totalling 21 million pounds. The record size of the major crop is attributable to the yield from new areas which have come into bearing and to the picking by the farmers, owing to the comparatively low prices, of every available pod.

## Tea.

*India*: In June weather varied considerably throughout the northeastern tea districts but was on the whole "seasonable", while in South India it was wet and stormy. As a result crop prospects in the former area are fair and in the latter poor. In North India production up to the end of June was 10 ½ million pounds below that to the same date last year. In South India the corresponding decrease was 2.6 %.

*Japan*: Crop condition on 1 August was good and appreciably better than on 1 July. Weather had been favourable.

## Coffee.

*Tanganyika*: The failure of the rains has led to the crop suffering severely from drought, especially in Arusha. Picking began in May.

Production in 1933-34, as estimated on 1 June 1933, will be 253,000 centals. This shows a reduction in the May estimate, drought during the planting period having adversely affected prospective yields.

## Colza and Sesame.

*Austria*: Production of colza this year is estimated at about 57,000 centals (114,000 short tons) against 51,800 (103,600) in 1932 and 53,800 (107,600) on the average of 1927-31. Percentages 110.2 and 106.1.

*Netherlands*: Production of colza this year will be about 72,000 centals (144,000 bushels) against 62,000 (123,000) in 1932 and 113,000 (226,000) on the average of the five years ending 1931. Percentages 116.8 and 63.8.

*Palestine*: Sesame is generally very poor and in most places a complete failure.

## Groundnuts.

*Egypt* : Sowings have been finished and early crops are flowering. Weeding of late crops is in progress. The weather in July was favourable. Crop condition is average.

*Tanganyika* : Production in 1933-34, as estimated on 1 June, will be 382,300 centals. This shows a considerable reduction on the May estimate, drought during the planting period having adversely affected prospective yields.

## Jute.

*India* : In North Bengal a lack of water for steeping was reported at the beginning of August but rainfall rose to normal in the first decade of the month. In Bihar and Orissa the crop was doing well at the end of July, though heavy rain in Orissa in the middle of that month had caused some damage in Purnea and Bhagalpur; in the first decade of August precipitation was also excessive.

## Sericulture.

*Syria and Lebanon* : Condition of mulberries in mid-July was good (100) against 95 in June 1933 and 100 in July 1932.

Production of fresh cocoons in the State of Latakia and in Lebanon was estimated at 3,535,000 lb., about six-sevenths of the total, which in 1932 was 4,880,000 lb., and on the average of 1927-31 was 7,265,000 lb.

## FODDER CROPS

The hot dry weather that prevailed in July in the majority of European countries hindered growth of aftermath notably in Germany, France and Italy; in those areas where good rains fell in the latter half of the month, as in Denmark, the Netherlands and parts of the Baltic countries, the situation greatly improved.

In Canada and the United States fodder crops suffered greatly from drought.

*Germany* : The hot dry weather of the latter part of July somewhat slackened growth of mangolds, of which crop condition was still, however, satisfactory at the beginning of August. Second growth of clover and alfalfa in the meadows and pastures was checked by the drought. Haymaking which was been delayed this year by the rains in June was in large part completed toward mid-July. Quality of hay shows the effects of these weather conditions in varying degree.

Production of hay from irrigated meadows has been as follows in comparison with that last year and the five-year average.

		1933	1932	Average 1927-31	% 1933 = 100    = 100	
Irrigated meadows	(ooo centals) . . .	33,184	45,264	44,087	73.3	75.3
	(ooo short tons) .	1,659	2,263	2,204		
Permanent meadows	(ooo centals) . . .	358,625	513,483	471,790	69.8	76.0
	(ooo short tons) .	17,931	25,674	23,589		

*Austria* : The growth of mangolds has improved, but, due to the increasing diffusion of weeds, a second cleaning will be necessary. Clover hay has now already been stored. Yields vary, especially on soils affected last year by the drought. Red clover is growing rapidly and the second cutting of early crops has already been finished. Other clover crops, owing to the delayed first cutting, are still a little backward but growth is satisfactory.

Alfalfa crops are rather poor owing to lack of warmth at the beginning of growth, but the second cutting has been good and growth is luxurious. Yields from permanent meadows affording several cuttings have been very variable since in inferior meadows much grass has been left uncut. Owing to the rain, quality has greatly suffered and losses have been by no means small. Growth, however, has recovered and is now fairly luxurious; in the early cut meadows a further cutting was feasible at the beginning of August.

In meadows affording only one cutting and in the mountains, mowing was in full swing at the beginning of August and stacking has begun. Growth of alpine pastures has revived and offers abundant feed but rains have often impeded grazing. The condition of other pastures is also satisfactory.

The first cutting of hay has given the following results :

		1933	1932	Average 1927-1931	% 1933 1932 — 100	
Red clover	(ooo centals) . . .	8,157	5,225	8,162	156.1	99.9
	(ooo short tons) . .	408	261	408		
Alfalfa	(ooo centals) . . .	2,205	1,720	2,332	128.2	91.5
	(ooo short tons) . .	110	86	117		
Mixed clover	(ooo centals) . . .	2,359	2,161	3,066	109.2	76.9
	(ooo short tons) . .	118	108	153		
Permanent meadows 2-3 cuttings	(ooo centals) . . .	44,974	45,415	42,390	99.0	106.1
	(ooo short tons) . .	2,249	2,271	2,119		

*Belgium* : The hay crop has been generally small and of mediocre quality, save in the Ardenne. Clovers and alfalfa, however, have made a good crop and have been brought in under good conditions.

*Denmark* : The rains have benefited fodder roots. Hay was brought in under good conditions in most cases. Pasture drew especial advantage from the rains in the latter part of July.

Condition of fodder crops not included in the general table was on 1 August as follows, in comparison with that on 15 July 1933 and that on 1 August 1932.

	Islands			Jutland		
	1-VIII-1933	15-VII-1933	1-VIII-1932	1-VIII-1933	15-VII-1933	1-VIII-1932
Carrots . . . . .	94	93	97	88	88	91
Kohl-rabi . . . . .	97	95	101	99	98	100
Turnips . . . . .	95	94	98	96	96	95

*Estonia* : Drought checked growth of grass and considerably reduced hay production. The condition of pasturage was also rather unsatisfactory, though the rains in the latter half of July brought some improvement.



*The Condition of Fodder Crops.*

CROPS AND COUNTRIES	CROP CONDITION †)								
	1 August 1933			1 July 1933			1 August 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
<b>CLOVER:</b>									
Germany . . . . .	2.6	—	—	2.7	—	—	2.7	—	—
Austria 1) . . . . .	2.1	—	—	2.2	—	—	2.6	—	—
Estonia . . . . .	—	—	71	—	—	—	—	—	2) 84
Latvia . . . . .	—	—	—	—	—	90	—	—	90
Netherlands:									
red clover . . . . .	—	2) 65	—	2) 61	—	—	—	2) 63	—
white clover . . . . .	—	—	2) 65	2) 70	—	—	2) 70	—	—
<b>ALFALFA:</b>									
Germany . . . . .	2.7	—	—	2.8	—	—	2.6	—	—
Austria . . . . .	1.9	—	—	2.3	—	—	2.9	—	—
<b>MANGOLDS:</b>									
Germany . . . . .	2.5	—	—	2.7	—	—	2.5	—	—
Austria . . . . .	2.1	—	—	2.5	—	—	2.4	—	—
Bulgaria . . . . .	130	—	—	130	—	—	130	—	—
Denmark:									
Jutland . . . . .	—	—	99	—	—	3) 98	—	100	—
Islands . . . . .	—	—	97	—	—	3) 95	—	—	99
Scotland . . . . .	—	100	—	—	—	—	—	—	—
Finland 4) . . . . .	—	—	60	—	—	70	—	—	94
Lithuania . . . . .	106	—	—	103	—	—	120	—	—
Norway . . . . .	—	—	82	—	—	81	—	—	—
Netherlands . . . . .	2) 71	—	—	—	—	—	2) 68	—	—
Switzerland . . . . .	—	100	—	—	—	98	—	—	95
<b>TEMPORARY MEADOWS:</b>									
Austria 5) . . . . .	2.1	—	—	2.2	—	—	2.8	—	—
Bulgaria . . . . .	110	—	—	110	—	—	110	—	—
Denmark:									
Jutland . . . . .	—	—	77	—	—	80	—	—	95
Islands . . . . .	—	—	80	—	—	74	—	—	99
Scotland . . . . .	—	—	94	105	—	—	—	—	—
Finland . . . . .	—	—	82	—	—	88	—	—	84
Norway . . . . .	—	—	80	—	—	78	—	—	94
Switzerland . . . . .	4.2	—	—	3.7	—	—	3.9	—	—
<b>PERMANENT MEADOWS:</b>									
Germany:									
irrigated meadows . . . . .	2.6	—	—	2.7	—	—	2.4	—	—
other meadows . . . . .	2.8	—	—	—	3.0	—	2.7	—	—
Austria . . . . .	2.1	—	—	2.5	—	—	2.7	—	—
Bulgaria . . . . .	125	—	—	125	—	—	130	—	—
Denmark:									
Jutland . . . . .	—	—	89	—	—	91	—	—	92
Islands . . . . .	—	—	86	—	—	88	—	—	95
Scotland . . . . .	—	—	96	—	—	—	—	—	—
Finland . . . . .	—	—	75	—	—	84	—	100	—
Norway . . . . .	—	—	71	—	—	76	—	—	—
Netherlands 6) . . . . .	—	—	2) 62	2) 59	—	—	2) 70	—	—
Switzerland . . . . .	4.1	—	—	3.5	—	—	4.0	—	—
<b>PASTURES:</b>									
Austria . . . . .	2.5	—	—	—	—	3.4	2.9	—	—
Denmark:									
Jutland . . . . .	—	—	85	—	—	80	—	—	78
Islands . . . . .	—	—	90	—	—	74	—	—	91
Scotland . . . . .	—	—	90	—	—	—	—	—	—
Netherlands . . . . .	2) 65	—	—	—	—	2) 60	—	—	2) 58
Switzerland . . . . .	3.9	—	—	—	—	2.6	3.6	—	—

a) Above the average. — b) Average. — c) Below the average. — d) excellent. — e) good. — f) average. — g) bad  
†) See explanation of the various systems on page 515. — 1) Red clover. — 2) At the middle of the preceding month. —  
3) On 15th July. — 4) Turnips. — 5) Kleegrass. — 6) Meadows for hay

*Irish Free State* : The weather during July was generally dry but there were fairly heavy falls of rain during the month. The weather on the whole was favourable to growth.

The areas under certain fodder crops in 1933 are estimated as follows :—

	1933	1932	Average 1927-1931	% 1933 1932=100	% 1933 Av.=100
	(000 acres)				
Turnips . . . . .	173	177	184	97.6	93.9
Mangolds . . . . .	83	81	82	102.1	100.7

*Finland* : In the table below are given the most recent estimates of production of the principal fodder crops, compared with those of last year and the average of the preceding quinquennium :—

		1933	1932	Average 1927-1931	% 1933 1932=100	% 1933 Aver. =100
Temporary meadows	(000 centals) . . . . .	52,613	65,963	56,531	79.8	93.1
	(000 sh. tons) . . . . .	2,631	3,298	2,826		
Permanent meadows	(000 centals) . . . . .	5,346	8,984	9,870	59.5	54.2
	(000 sh. tons) . . . . .	267	449	493		
Fodder roots and tubers	(000 centals) . . . . .	7,996	15,269	13,581	52.4	58.9
	(000 sh. tons) . . . . .	400	763	679		
Fodder turnips	(000 centals) . . . . .	5,847	11,861	12,188	49.3	48.0
	(000 sh. tons) . . . . .	292	593	600		
Other roots and fodder tubers in general	(000 centals) . . . . .	2,150	3,408	—	63.1	—
	(000 sh. tons) . . . . .	107	170	—		

*France* : The first fodder crop was rather mediocre ; the drought was injurious to aftermath and second crops, as well as to leguminous crops, fodder crops and pastures.

Storm rain fell at the end of the month and somewhat improved leguminous and root crops. Fodder seed crops have been greatly compromised in the west by drought.

*Great Britain and Northern Ireland* : The warm and generally dry weather in England and Wales in June was continued during July with some thunder rains, despite which the hay harvest proceeded under very favourable conditions and the crop was practically secured by the end of July for the most part in excellent conditions and the quality was generally satisfactory. Rain was badly needed, however, for the root crops and for pastures. The weather favoured the destruction of weeds.

The yield per acre of seeds hay is estimated at nearly 25 cwt. per acre as compared with the ten year average of 28  $\frac{3}{4}$  cwt. ; meadow hay : 17  $\frac{3}{4}$  cwt. per acre (average 20  $\frac{3}{4}$  cwt.). Pastures have become generally bare due to the dry, hot weather. Mangolds are in very satisfactory condition and a good average yield is anticipated. Condition of turnips and swedes varies ; lack of rain and fly have caused trouble ; in most areas a light crop is anticipated.

In Scotland the weather was warm and dry. Occasional local showers fell during the second half of the month which benefited root crops and pastures. Most of the hay was secured quickly and in excellent conditions, but as a result of the dry conditions, the produce of the crop will be rather below the average. Pastures suffered from the summer drought, particularly on light soils, but were refreshed by the light rains.

which occurred during the latter part of July. Mangolds were strong and healthy and turnips and swedes a good promising crop.

Areas of certain fodder crops in 1933 are as follows :—

	1933	1932	Average 1927-1931	% 1933 1932 = 100	Aver. 1933 = 100
	(000 acres)				
Mangolds :					
<i>England and Wales</i> .....	238	230	292	103.6	81.6
<i>Scotland</i> .....	1.7	1.1	1.2	158.5	142.4
Turnips and swedes :					
<i>England and Wales</i> .....	555	580	685	95.7	81.1
<i>Scotland</i> .....	350	348	372	100.4	94.1
Temporary meadows (for hay) :					
<i>England and Wales</i> .....	1,261	1,538	1,600	82.0	78.8
<i>Scotland</i> .....	392	397	408	98.7	96.0
Temporary meadows (not for hay):					
<i>Scotland</i> .....	1,076	1,114	1,099	96.6	97.9
Permanent meadows (for hay) :					
<i>England and Wales</i> .....	4,602	4,542	4,668	101.3	98.6
<i>Scotland</i> .....	177	166	168	106.3	105.6
Permanent meadows (not for hay) :					
<i>Scotland</i> . . . . .	1,408	1,410	1,381	99.9	102.0

*Hungary* : Mangolds at the beginning of August had greatly improved, especially where rain had fallen. Foliage is abundant and the bulbs are healthy but in some districts they were suffering from drought. The second cuttings of clover and alfalfa are in general satisfactory. In many regions the crop has already been stored with fairly good results; in many districts the third alfalfa cutting had already begun. Mixed fodder and vetches have given good yields. Harvesting of maize for green fodder has begun. The crop is mostly well developed but needs rain. Mohair is a strong crop. Aftermath from meadows had grown well but needed more moisture for maintenance. Pastures, where rain had fallen, gave adequate feed for livestock. Meadows and pastures near the Tisza were still flooded at the beginning of August.

*Italy* : The meadows have so far given abundant yields; moisture shortage has, however, recently partly checked growth.

*Latvia*: According to agricultural correspondents' reports as on August 1 an average clover crop was anticipated in 60.8 % of the replies, a good one in 30.1 % and a bad one in 9.1 %. The corresponding percentages for permanent meadows are 69.1 %, 16.9 % and 14.0 %. The yield per acre of clover is forecast at about 27 centals (1 short ton) and that of permanent meadows at 11 (1) to 21 (1).

Rainfall was insufficient on most fodder areas.

*Lithuania* : The area clover and other grasses this year is about 957,000 acres against 939,000 in 1932. Percentage 101.9.

During July the weather conditions favoured fodder crops.

*Norway* : Fodder crops have in general given poor yields ; insects have caused considerable damage and many fields sown to fodder roots have had to be resown to barley for green fodder.

Condition of turnips and kohl-rabi on 1 August was respectively 69 and 82 according to the system of the Institute.

*Netherlands* : Mangolds promise a good yield. Condition of clover is satisfactory and the rains have been very beneficial to pasture.

*Poland* : Appearance of meadow toward mid-July after the first cut was rather unsatisfactory owing to the flooding of many areas and yields of the second cut in the southern departments were doubtful. In the eastern departments the first cut was damaged by floods.

*Switzerland* : Haymaking, though considerably delayed by storms in June, was rapidly completed at the beginning of July. The crop is below that of last year both in quality and quantity. It was brought in under very good conditions for the greater part but after having remained too long standing. On the other hand the condition of meadows and alps was notably better. Aftermath had generally a good appearance. In districts where haymaking was early the harvesting of the aftermath had already begun toward the end of July. The first aftermath is satisfactory in both quantity and quality. Green fodder is therefore plentiful.

*Argentina* (Telegram of 19 August) : The persistent drought has resulted in serious damage to pastures. In the north there has also been some damage from grasshoppers.

*Canada* : The latest estimates of the areas of certain fodder crops in Canada are estimated as follows :

	1933	1932	Average 1927-31	% 1933 1932 = 100	% 1933 Average = 100
	(000 acres)				
Hay and clover. . . . .	8,778	8,812	10,052	99.6	87.3
Alfalfa (first cutting) . . .	702	666	773	105.4	90.8

According to a telegram of 2 August, in the Maritime Provinces crop conditions were generally fair and the hay harvest progressed favourably ; early crops were promising but rains were needed for late crops and pastures. In Quebec rains were generally needed ; hay yields were considerably below the average ; pastures were poor. Ontario was suffering from the most severe drought in many years ; second growth alfalfa and clover were being grazed. British Columbia also reported need of rain in most parts of the Province although prospects still indicated fair to good crops.

In the week ended on 9 August pastures and feed supplies were scarce from Quebec to the Alberta foothills.

In the week ended on 16 August the weather was dry and pastures were dried up. Winter supplies of grain and fodder were considerably reduced.

The continued period of drought further damaged pastures and roots in the week ended on 22 August. General rain was needed in the South to encourage new growth.

*United States* : A slight decrease has been made in the estimate of wild hay production compared with that published last month. The forecast for tame hay has been raised from 1,320 million centals (66 million short tons) to 1,476 million (73.8 million) representing 106.0 % of 1932 and 102.2 % of the 1927-1931 average. Alfalfa production is estimated at 478 million centals (23.9 million short tons) ; 92.0 % and 101.2 %.

*Palestine* : Oats and vetch hay mixture crop is generally poor and varies from 30 to 70 % of normal. Last cutting of bersim has been taken for seed. A certain amount of bersim hay has been imported from Egypt.

*Egypt* : Cutting of bersim has been finished and threshing operations are in progress. The yield is normal.

*French Morocco* : The fodder crop was poor owing to the drought ; pastures are dried up.

## LIVESTOCK AND DERIVATIVES

### Livestock in France.

The following table gives, for the different kinds of livestock, the total numbers and the numbers of the different kinds as enumerated on December 31.

	1932	1931	1930	1929	1928	1927	1926	1925	1) 1913
	thousand head								
<i>Horses</i> . . . . .	2,901	2,919	2,924	2,986	2,936	2,927	2,894	2,635	3,222
of which :									
1 year old and over . . . . .	2,354	2,358	2,350	2,345	2,348	2,342	2,317	2,096	2,550
under 1 year old . . . . .	547	561	574	641	588	585	577	539	672
<i>Mules</i> . . . . .	135	144	154	143	166	183	185	181	188
<i>Asses</i> . . . . .	228	241	252	234	250	260	264	298	356
<i>Cattle</i> . . . . .	15,643	15,434	15,467	15,631	15,005	14,941	14,482	13,217	14,788
of which :									
bulls . . . . .	261	255	246	213	278	278	266	246	284
bullocks . . . . .	1,375	1,389	1,362	1,318	1,441	1,444	1,426	1,338	1,843
cows . . . . .	8,450	8,274	8,288	8,196	8,118	7,971	7,701	6,830	7,794
1 year old and over . . . . .	3,096	3,094	3,049	3,033	3,116	3,137	3,025	2,830	2,854
under 1 year old . . . . .	2,461	2,421	2,522	2,871	2,052	2,112	2,064	1,973	2,012
<i>Sheep</i> . . . . .	9,762	9,845	10,152	10,452	10,445	10,693	10,775	9,406	16,131
of which :									
rams . . . . .	207	212	213	244	209	213	214	203	294
ewes 1 year old and over . . . . .	5,980	6,009	6,163	6,087	6,503	6,610	6,635	5,818	9,288
sheep 1 year old and over . . . . .	1,137	1,211	1,302	1,545	1,271	1,329	1,327	1,085	2,581
lambs under 1 year old . . . . .	2,438	2,413	2,474	2,575	2,461	2,542	2,599	2,301	3,968
<i>Goats</i> . . . . .	1,463	1,488	1,675	1,885	1,372	1,405	1,388	1,341	1,435
<i>Pigs</i> . . . . .	6,488	6,398	6,329	6,102	6,017	6,019	5,777	4,942	7,036
of which :									
boars . . . . .	39	37	34	34	33	34	33	29	39
sows . . . . .	870	814	822	771	790	785	776	709	907
livestock for fattening, 6 months old and over . . . . .	2,344	2,366	2,332	2,265	2,250	2,275	2,143	1,772	2,800
livestock for fattening under 6 months old . . . . .	3,235	3,181	3,141	3,032	2,944	2,925	2,825	2,432	3,290

1) Excluding Alsace and Lorraine.

The above table, although showing clearly the statistical situation as regards French livestock, gives only an imperfect indication of the livestock situation and its development during recent years.

Until 1929, this development was influenced by natural known causes. After this date, three factors dominated the French industry: the restriction of the home market, the rapid and almost complete closing of the foreign markets and a very large increase in imports.

Horses, mules and asses have all been particularly affected by the almost complete closure of foreign markets; this has given rise to a very grave crisis in the production of high grade cattle, particularly those for breeding which form an important part of rearings. The fall in the numbers of mules and asses, caused by the decreased use in France of traction and saddle animals, has been greatly accentuated and has reached the proportion of 10-11 % in the last two years after a considerable recovery in 1930.

As regards horses, there were in addition very large imports in the years 1930 and 1931, which still further reduced the possibility of sales within the country and largely compensated for the increase in consumption of horse meat. These imports brought about an artificial increase in numbers and partly concealed the regression in French horses which was 12 % at the end of 1932 compared with the number in December 1929; although they were reduced during 1932, these imports were still sufficient to nearly compensate for the diminution which the reduction in the number of foals in 1930 should normally have brought about in the number of adults at the end of 1932.

The same causes have influenced the breeding of slaughter animals. The increase in the number of bulls since 1929 is consequently exclusively due to a large import from abroad together with the impossibility of foreign sales. Production of high grade breeding animals of these three kinds is still gravely affected. Meat consumption, which increased constantly up to 1931, has decreased in the last two years together, in 1932, with that of dairy products.

To this normal phenomenon due to the general economic crisis, has been added a considerably increased import of live cattle and meat, with the result that France, generally an exporter of livestock, became a large importer in 1928 and 1929; in 1929 the balance was restored by a net export of 159,000 head of cattle, in 1931 by a net import of 171,000 head and in 1932 by a net import of 83,000 head; net imports of beef increased from 19,200 thousand pounds in 1929 to 132,000 thousands pounds in 1931 and fell in 1932 to 61,500 thousand pounds.

These various phenomena have brought about a crisis of overproduction of cattle, resulting in a very large fall in prices and bad sale conditions. Fat cattle quotations on the Villette market in January 1933 were  $\frac{1}{5}$  below those of January 1932 and  $\frac{1}{2}$  of the those of January 1931; for veal, the fall is 30 % compared with January 1932 and 40 % compared with January 1931; quotations for live cattle, have, on the whole, decreased by over 40% since spring 1931.

Low prices, together with a relatively small fodder production is the principal cause of the decrease in the number of young cattle in 1930 and 1931 and this

together with imports from abroad, explains the increase in the number of adult animals. The increase in the number of animals one year old and under as on December 31, 1932 is due to different causes, on the one hand, a certain rise in quotations in spring 1932 and, on the other, an abundant fodder crop; as a result, congestion of the market and unremunerative quotations together with a comparatively mild winter, have combined to induce the withholding of young animals.

The regression in the number of sheep, due to more general causes, accentuated by the crisis and the fall in wool quotations, seems to have prevented overproduction in this branch of the industry. As regards pigs, the almost regular increase in numbers is apparently due to two phenomenon; on the one hand, the increased taste of the consumer for pork has brought about a larger production of young lean pork with the result that the number of animals has increased and weight has decreased; on the other hand, small producers show a tendency to short term speculations at small amounts, with the result that such rearing has regained the popularity amongst small farmers which it had before the war. It should be noted that the growth of imports of pigs in the years 1930 and 1931 has slackened the growth of this industry, which, however, recovered sharply with the decrease in imports in 1932.

The slight recovery in sheep in 1932 was apparently due to the second cause indicated for pigs, namely, the tendency to make small short term supplementary speculations.

On the whole, the French livestock situation in 1933 is characterised by general overproduction which tends to become more accentuated, imports, however, remaining large though decreasing. Sale conditions are consequently bad, especially as fodder production is on the whole apparently not very satisfactory; prices again fell during the first half of the year.

Statistically, this situation should result in a decrease in the number of young livestock born during the year and an increase in the number of adult cattle.

### Livestock in Greece.

The following table gives the numbers of livestock in 1932 and at the same time shows the variations which have taken place during the last ten years.

Year	Cattle	Horses	Asses	Mules	Sheep	Goats	Pigs	Buffaloes
1932 . . . . .	875,275	324,234	363,705	160,388	6,926,960	4,677,525	471,740	45,782
1931 . . . . .	867,612	325,294	352,862	159,507	7,071,725	4,625,990	422,521	45,885
1930 . . . . .	837,175	316,901	343,271	153,870	6,799,067	4,637,386	335,407	43,732
1929 . . . . .	831,059	323,339	380,648	147,817	5,805,646	4,179,214	275,684	43,001
1928 . . . . .	910,203	290,306	342,870	149,610	6,920,361	4,919,118	418,524	44,680
1927 . . . . .	908,585	276,741	328,152	135,299	6,441,830	4,579,199	452,595	38,558
1926 . . . . .	924,752	280,522	318,861	147,601	6,950,541	4,669,489	509,636	38,762
1925 . . . . .	854,230	269,510	299,233	138,037	6,636,433	4,103,136	451,561	36,233
1924 . . . . .	844,452	258,934	282,851	138,730	6,622,917	4,169,281	390,382	19,293
1923 . . . . .	671,049	194,375	236,946	117,762	5,643,344	3,674,033	334,420	30,230

The inadequacy of feed caused by the deficiency in Greece of meadows and other areas devoted to fodder crops does not permit, despite the great area of pastures, a regular, intensive increase in livestock rearing and makes the country dependent on imported livestock.

Despite the efforts made by the Government during the last ten years to increase the national livestock resources and at the same time to reduce the growing imports of livestock, the numbers of native stock of all kinds, although showing a fairly large increase in 1932 compared with 1923, have not changed considerably during the last nine years.

The frequency of unfavourable weather, epizootic disease and the increase in meat consumption, owing to the increase in population, did not permit a considerable increase in livestock numbers.

In fact, the number of cattle, sheep and goats, which are the kinds most imported in Greece, despite an increase during the last four years, was in 1932 still larger than in 1928 and a little larger than in 1923.

A more regular but not very large increase has taken place in the numbers of horses, asses, mules and buffaloes.

The number of pigs, after having reached in 1926, a record figure (510,000 head), greatly decreased in 1928 but recovered their upward trend and in 1932 reached the level of 1926.

It is interesting to note a large increase in the number of poultry during recent years.

As may be seen from the following figures:

1932 . . . . .	Poultry total	10,062,641
1931 . . . . .	»	9,037,099
1930 . . . . .	»	8,635,197
1929 . . . . .	»	4,683,021
1928 . . . . .	»	8,693,241
1927 . . . . .	»	7,737,826
1926 . . . . .	»	7,312,703

The progressive increase in the number of poultry since 1926 was sharply interrupted in 1929 by the very severe winter of 1928-29.

According to information also received from the Ministry of National Economy, the production of hens' eggs in 1932 reached 403 million against 339 millions in the preceding years.



## Livestock in Czechoslovakia.

In the following table are given the final data of the annual enumeration of livestock carried out on 31 December 1932 compared with the corresponding data for 1931 and 1930 and with the census returns of 1925 and 1920.

*Numbers of livestock in Czechoslovakia*

Years	Horses	Cattle		Sheep	Goats	Pigs	
		Total	Cows			Total	Brood sows of 6 months and over
1932 (31-XII) . . . . .	707,579	4,341,551	2,476,570	465,093	876,771	2,621,235	445,282
1931 (31-XII) . . . . .	—	4,450,905	2,464,616	551,125	—	2,575,921	348,760
1930 (31-XII) . . . . .	—	4,457,522	2,433,830	607,612	—	2,776,215	441,821
1925 (31-XII) . . . . .	740,202	4,691,320	2,331,461	861,128	1,244,701	2,539,201	304,559
1920 (31-XII) . . . . .	590,687	4,376,765	2,027,847	985,526	1,220,752	2,052,687	371,895

1) Sows of over one year for breeding. — 2) Not including "other pigs over one year" (10 %).

The data for 1932, compared with those for 1931, show a decrease of 2.5 % in the total of cattle, but a slight increase (0.5 %) in dairy cows; in other words in 1932 the same tendency that had been noted in preceding years for cows especially has continued. Sheep decreased in number in 1932 by 12.4 % with respect to 1931 and, after a continual regression, have now only half the number recorded in 1920.

Data for horses and goats are wanting in the 1931 and 1930 statistics so that comparison can be made only with the census data of 1925 and 1920. In relation to 1925 the number of horses has decreased by 4.4 % and that of goats by about 29.6 %.

For pigs 1932 on the whole shows a slight increase (1.8 %) on 1931, when there was a heavy fall on the previous year; there is a very marked increase in 1932 (27.7 %) with respect to 1931 in brood sows.

The same tendency was accentuated during the first six months of 1933 as may be seen from the following special estimates for pigs on 1 July 1933 compared with those at the same date of 1932.

In the various regions of the country, modifications in the number of pigs have been as follows: increases of 13.9 % in Bohemia and of 8.1 % in Moravia and Silesia and decreases of 7.6 % in Slovakia and of 16.9 % in Sub-Carpathian Russia.

*Numbers of pigs in 1933*  
(Head).

CLASSIFICATION	1-VII-1933	1-VII-1932	Increase (+) or decrease (—) (1932 = 100)
Boars for reproduction . . . . .	13,903	12,687	+ 9.6
Sows for reproduction (excluding those for fattening) . . . . .	517,274	460,984	+ 12.2
of which :			
from 6 months to 1 year . . . . .	182,247	149,885	+ 21.6
1 year old and over . . . . .	335,027	311,099	+ 7.7
Other pigs (including sows for fattening) .	2,745,894	2,608,785	+ 5.3
of which :			
pigs up 8 weeks old . . . . .	836,724	770,354	+ 8.6
pigs from 8 weeks to 6 months old . .	1,548,212	1,431,531	+ 8.2
pigs 6 months old and over . . . . .	360,758	406,900	— 11.3
Total . . .	3,276,871	3,082,456	+ 6.3

**Sheep in New Zealand.**

The interim return of sheep as at 30 April 1933 shows a decrease of over 900,000 compared with the total at the corresponding date in 1932. This is the third successive decrease and represents a fall of 3,064,000 from the record figure of 30,841,000 in 1930. The total is the lowest since 1928. The decrease has this year been confined to the South Island (6.77 %), in contrast to the preceding two years, when the decrease in the North Island was relatively greater than that in the South Island. In the North Island this year there has been a very slight increase (0.11 %).

	Thousand head		Thousand head
1933 . . . . .	27,777	1928 . . . . .	27,134
1932 . . . . .	28,692	1927 . . . . .	25,649
1931 . . . . .	29,793	1926 . . . . .	24,905
1930 . . . . .	30,841	1925 . . . . .	24,548
1929 . . . . .	29,051	1924 . . . . .	23,776

## Current Information on Livestock and Derivatives.

*Belgium* : Health is satisfactory but some losses from aphthous fever have occurred.

*Irish Free State* : Feed supplies in July were adequate for the anticipated needs of livestock. Yields were well above the average.

*France* : The health of livestock at the end of July was good, except in Normandy, despite the drought which had persisted since June; storm rains fell, however, in the last few days of July. The shortage of grass is causing anxiety as regards supplies for the coming winter despite the anticipation of a heavy production of leguminous fodder crops.

*Great Britain and Northern Ireland* : Milk yields have fallen in all districts of England and Wales.

In Scotland ample supplies of concentrated foods are available for dairy cattle. The milk supply has fallen off gradually and in many districts the yield is slightly below the average for the season.

*Netherlands* : Forecasts of quality of quantity of dry and green fodder are fairly good. Milk production is practically normal.

*Switzerland* : The preliminary estimate of milk deliveries in June at the collecting centres gives for 556 societies a mean increase of 8.9 % on those of the same month last year. The increase is 8.2 % in German Switzerland and 11.1 % in Romance Switzerland. With reference to June 1913 deliveries are about 20 % greater.

*Canada* : According to a telegram of 27 July the feed situation was serious in some southern areas. Local showers were the rule during the week when general rains were needed.

In the week ended on 16 August winter fodder supplies were reported to be considerably reduced and the reaction on the livestock industry was of real concern. Milk production was already falling and livestock were generally in only fair condition.

In the week ended on 22 August the feed situation was serious in the South and general rain was needed to encourage new growth to last stock until the snow falls.

*United States* : According to a report published in July by the Department of Agriculture, the 1933 lamb crop for the United States, 28,998,000 head, was about 2½ % or 700,000 head smaller than the 1932 crop. The smaller crop this year compared with last was a result both of a smaller percentage lamb crop, the smallest for the last ten years recorded, and a smaller number of breeding ewes one year old and over on 1 January 1933 (500,000 head less than on 1 January 1932). Nearly all the decrease in the lamb crop took place in the western sheep States.

According to an official report of 2 August, the amount of wool shorn or to be shorn in 1933 is 348,194,000 lb. This preliminary estimate is 4 million lb., or 1 % higher than the amount shorn in 1932. Average weight per fleece was 2 % higher than in 1932 and offset the decrease of 1 % in the number of sheep shorn.

According to a report published by the U. S. Department of Agriculture towards the end of July, the number of hens and pullets in farm flocks on 1 July was practically the same as last year but the number of young chickens in farm flocks was 3 % greater than a year ago. The probable number of layers in farm flocks during the coming fall and winter appears now to depend mainly upon whether the heavy marketings of laying stock, which have accompanied the rise in the price of feed and the lag in the rise of egg prices, will continue long enough to wipe out the gain in the number of chickens raised.

The number of eggs laid per hen on the first day of each month from January to July, has averaged 3 to 4 % less this year than the record figures of 1931 and 1932 but was 1 % larger than the average of these months for the preceding 5 years. The low price of eggs prevailing in recent months and the increased price of feed have given little encouragement to liberal feeding. The total production of eggs per hen for the year seems likely to fall below rather than to exceed the five-year average.

*Algeria* : Stock which has found fairly plentiful grass in the stubble fields, is in good condition despite the drought.

*Basutoland* : The number of cattle in 1933 is estimated at 550,000, as in the previous year, a drop of 50,000 from that in 1931. According to the returns made by the Principal Veterinary Officer the number of horses is 89,600, the continued decrease from the maximum of 204,800 in 1929 being due to bad years and to a heavy mortality from cirrhosis. The extraordinary drop in the numbers of sheep and goats in the last two years, from 2,829,000 to 1,885,000 and from 1,006,000 to 669,000 respectively, is due to mohair being practically unsaleable, to the fall in wool prices to a penny a pound and to the great shortage of food which has resulted in many of the animals being eaten.

*French Morocco* : Wayside feed is of little value, stubble land and the first maize crops harvested furnish an appreciable supplement of livestock feed which are not yet suffering much from the drought.

*Union of South Africa* : Severe drought continued in June without relief save in the southwestern districts of Cape Province and along the Cape South Coast and Cape West Coast. The exceptional cold and frost, with falls of snow in high-lying districts, aggravated the serious conditions. Stock fell off still further in condition and heavy losses continued to be suffered. Green feed was practically unobtainable. The lamb crop was expected to be largely a failure. Even the more favoured areas were overstocked as a result of the influx of stock and the feeding of stock in the remaining areas until the first summer rains was a problem without solution for many farmers. In the northern provinces a certain amount of feed was provided by reaped lands and fodder crops, which were, however, insufficient for local needs. Dry grazing was still fairly plentiful in the eastern districts of Bechuanaland but unfortunately water supply in these areas was generally insufficient.

## TRADE

COUNTRIES	JUNE				ELEVEN MONTHS (August 1-June 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	146	205	0	0	1,702	5,531	0	0	5,688	0
Hungary . . . . .	509	520	0	0	2,965	7,804	2	0	7,912	0
Lithuania . . . . .	0	0	0	0	2	20	0	0	20	0
Poland . . . . .	247	165	0	0	734	1,415	483	342	1,598	346
Rumania . . . . .	0	225	0	0	24	21,138	9	7	21,200	9
U. S. S. R. . . . .	0	509	0	0	503	8,684	0	0	39,820	1,515
Yugoslavia . . . . .	...	...	...	...	10,862	39,820	1,373	337	8,796	0
Canada . . . . .	10,199	9,515	0	4	134,260	97,912	31	71	109,685	75
United States . . . . .	9	4,167	395	525	11,484	50,795	5,011	6,744	52,805	7,361
Argentina . . . . .	8,045	5,214	—	—	67,746	80,396	—	—	82,114	—
Chile . . . . .	0	0	4	0	7	9	708	0	9	0
Turkey . . . . .	42	26	0	0	174	908	0	0	913	0
Algeria . . . . .	...	...	...	...	4,808	3,292	862	1,257	4,837	1,462
Tunis . . . . .	165	1,706	0	18	2,910	3,885	337	392	5,337	401
Australia . . . . .	2,875	5,536	0	0	67,922	70,087	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	18	15	1,724	4,328	12,527	7,308	16,938	17,675	7,313	21,006
Austria . . . . .	0	0	1,204	589	0	6,594	5,862	0	0	6,418
Belgium . . . . .	353	207	1,750	3,318	2,059	3,415	24,046	28,757	3,587	31,484
Denmark . . . . .	0	0	388	617	15	9	5,734	8,203	9	8,719
Spain . . . . .	0	0	0	1,365	0	0	0	1,526	0	6,482
Estonia . . . . .	0	0	0	9	0	0	0	256	0	256
Irish Free State . . . . .	24	0	750	520	29	13	7,815	5,935	13	6,369
Finland . . . . .	0	0	75	37	0	0	829	373	0	428
France . . . . .	2	0	1,413	6,971	49	9	21,890	47,466	9	53,138
Gr. Brit. and N. Irel. . . . .	51	64	9,897	10,834	518	1,142	113,161	126,475	1,206	137,664
Greece . . . . .	0	0	946	1,175	0	0	10,761	13,199	0	14,116
Italy . . . . .	0	0	796	4,182	13	18	10,611	20,675	18	22,575
Latvia . . . . .	0	0	0	29	0	18	0	423	0	575
Norway . . . . .	0	0	344	256	0	0	3,175	3,142	0	3,294
Netherlands . . . . .	13	7	1,199	1,739	509	108	13,781	16,424	110	17,875
Portugal . . . . .	—	—	13	90	—	—	472	655	—	1,393
Sweden . . . . .	2	0	62	666	13	9	1,883	3,768	9	4,054
Switzerland . . . . .	2	2	847	884	15	15	10,565	11,660	18	12,683
Czechoslovakia . . . . .	0	0	1,508	1,023	2	4	5,051	12,134	4	13,199
India . . . . .	4	4	115	0	44	179	1,060	179	183	179
Japan . . . . .	—	—	899	3,080	—	—	10,942	16,731	—	17,070
Syria and Lebanon . . . . .	9	4	33	93	269	498	251	291	511	328
Egypt . . . . .	...	...	...	...	7	0	0	893	2	994
Union of South Africa . . . . .	...	...	...	...	0	2	154	926	2	1,034
New Zealand . . . . .	...	...	...	...	150	701	0	99	0	258
TOTALS . . . . .	22,715	28,091	24,362	42,352	322,324	404,425	275,252	352,877	427,519	392,760
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	2	0	0	66	988	0	0	990	0
Hungary . . . . .	412	123	0	0	1,523	1,420	0	0	1,486	0
Lithuania . . . . .	0	0	0	0	35	0	0	2	9	2
Poland . . . . .	897	73	0	0	6,111	2,216	216	123	2,513	123
Rumania . . . . .	0	13	0	0	9	1,662	0	0	1,678	0
U. S. S. R. . . . .	...	...	—	—	5,199	23,579	—	—	23,640	—
Canada . . . . .	0	624	0	0	1,484	3,677	0	0	5,066	0
United States . . . . .	0	163	—	—	22	476	—	—	622	—
Argentina . . . . .	538	99	—	—	2,923	5,071	—	—	5,097	—
Turkey . . . . .	29	35	0	0	313	675	0	0	690	0
Algeria . . . . .	...	...	...	...	11	11	0	0	29	0
<i>Importing Countries:</i>										
Germany . . . . .	0	2	240	1,711	2,974	2,044	6,821	10,082	2,046	12,103
Austria . . . . .	0	0	60	306	0	0	474	1,612	0	1,728
Belgium . . . . .	53	60	106	262	328	569	2,288	2,284	639	2,709
Denmark . . . . .	0	0	509	397	0	0	5,333	4,149	0	4,731
Estonia . . . . .	0	0	0	0	0	0	0	13	0	13
Finland . . . . .	0	0	337	379	0	0	1,261	1,012	0	1,202
France . . . . .	0	0	44	148	0	0	414	1,572	0	1,735
Italy . . . . .	0	0	11	22	0	0	256	150	0	157
Latvia . . . . .	0	0	0	9	0	0	0	99	0	99
Norway . . . . .	0	0	170	163	0	0	2,712	3,303	—	3,415
Netherlands . . . . .	4	4	395	452	71	326	3,871	3,616	331	4,187
Sweden . . . . .	2	7	4	231	15	26	267	1,188	26	1,334
Switzerland . . . . .	0	0	7	11	0	0	322	86	0	108
Czechoslovakia . . . . .	0	0	0	79	55	7	97	5,009	7	5,124
TOTALS . . . . .	1,935	1,205	1,883	4,170	21,139	42,747	24,332	34,300	44,867	38,770

1) See notes page 578.

COUNTRIES	JUNE				ELEVEN MONTHS (August 1-June 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany	234	2	4	9	1,918	64	66	179	64	229
Belgium	2	7	4	2	51	66	62	46	73	51
Bulgaria	0	40	0	0	53	736	0	0	732	0
Spain	0	0	0	0	7	18	0	0	18	0
France	331	251	49	29	3,812	4,645	459	231	4,764	262
Hungary	57	176	0	0	811	2,116	0	0	2,130	0
Italy	313	128	33	26	3,422	2,055	271	271	2,235	287
Latvia	0	0	0	0	0	0	0	0	0	0
Lithuania	2	2	0	0	22	24	0	0	26	0
Poland	13	22	0	0	227	494	0	4	511	4
Rumania	0	2	2	0	13	855	2	0	855	0
Yugoslavia	2	15	0	0	55	97	0	0	104	0
Canada	106	1,120	2	2	8,600	9,676	42	37	10,551	40
United States	710	833	0	0	7,901	14,409	2	0	15,091	0
Argentina	165	99	—	—	1,407	1,470	—	—	1,548	—
Chile	0	2	106	0	4	20	386	0	29	0
India	24	57	0	0	311	802	2	0	836	0
Turkey	2	478	0	4	5,699	3,120	13	106	11	4
Japan	0	0	0	0	0	11	0	4	3,470	106
Algeria	...	...	...	...	392	99	60	53	157	57
Tunis	13	13	7	2	157	128	51	20	146	20
Australia	814	981	0	0	11,693	13,067	0	0	13,995	0
<i>Importing Countries:</i>										
Austria	0	0	68	247	2	7	551	1,241	7	1,261
Denmark	2	0	62	62	15	11	692	1,228	13	1,290
Estonia	0	0	0	0	0	9	0	15	9	15
Irish Free State	0	2	126	348	0	26	1,704	3,693	26	4,048
Finland	0	0	112	110	0	0	1,124	1,464	0	1,596
Gr. Brit. and N. Irel.	304	465	944	875	3,975	5,137	8,453	10,516	5,628	11,224
Greece	0	0	2	2	0	0	20	64	0	66
Norway	0	0	117	106	4	9	1,047	1,265	11	1,358
Netherlands	0	0	97	51	18	68	840	694	71	723
Portugal	—	—	15	35	—	—	216	163	—	201
Sweden	0	0	0	4	0	0	9	35	0	37
Czechoslovakia	0	0	49	88	7	9	362	1,058	9	1,182
Ceylon	—	—	35	22	—	—	355	379	—	401
Java and Madura	—	—	...	...	—	...	836	996	—	1,144
Indo-China	—	—	24	18	—	—	311	364	—	388
Syria and Lebanon	13	0	46	22	95	90	745	366	93	397
Egypt	...	...	...	...	2	0	194	2,266	0	2,430
Union of South Africa	...	...	...	...	2	2	7	13	2	15
New Zealand	...	...	...	...	2	2	214	214	4	238
<b>Totals</b>	<b>3,107</b>	<b>4,695</b>	<b>1,904</b>	<b>2,084</b>	<b>50,677</b>	<b>59,342</b>	<b>19,096</b>	<b>26,985</b>	<b>63,239</b>	<b>29,074</b>
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria	22	2	0	0	132	403	0	0	406	0
Spain	4	0	0	0	53	11	0	0	15	0
Hungary	75	2	0	0	1,376	53	0	7	55	7
Lithuania	0	0	0	0	2	0	0	0	0	0
Poland	123	33	0	0	3,523	3,137	0	0	3,146	0
Rumania	959	756	0	0	10,719	15,501	0	0	15,913	0
Czechoslovakia	26	198	0	0	3,514	1,975	2	2	2,112	2
U. S. S. R.	...	...	—	—	7,665	17,793	—	—	17,789	—
Canada	42	489	0	0	2,430	5,688	0	0	6,499	0
United States	408	218	—	—	4,006	2,141	—	—	2,524	—
Argentina	1,305	57	—	—	8,212	6,396	—	—	6,418	—
Chile	75	31	0	0	260	487	0	0	492	0
India	0	258	2	0	4	666	2	0	666	0
Syria and Lebanon	0	0	7	11	31	377	337	101	384	104
Turkey	31	62	0	0	833	2,875	0	0	2,996	0
Egypt	...	...	...	...	88	0	0	273	2	273
Tunis	123	271	...	...	2,690	465	35	553	820	556
Australia	108	73	0	0	1,347	1,594	0	0	1,614	0
<i>Importing Countries:</i>										
Germany	0	0	373	1,250	4	18	3,325	15,197	18	15,970
Austria	0	0	181	117	0	0	1,753	1,995	0	2,075
Belgium	115	139	472	452	1,347	1,590	8,722	8,909	1,676	9,396
Denmark	31	24	150	256	448	474	1,942	2,932	474	3,331
Irish Free State	0	0	66	0	2	26	137	311	26	483
France	0	0	408	714	4	15	7,286	8,871	15	9,482
Gr. Brit. and N. Irel.	0	0	613	818	40	9	12,399	13,572	31	14,039
Greece	0	0	0	0	0	0	20	170	0	172
Italy	0	0	55	31	0	0	935	789	0	800
Latvia	0	0	0	0	0	0	0	4	0	4
Norway	0	0	66	4	0	0	157	785	0	794
Netherlands	2	2	518	622	104	262	7,948	8,512	262	9,112
Switzerland	0	0	90	205	0	0	4,187	2,842	2	2,989
Yugoslavia	9	0	0	0	44	13	4	37	13	37
Algeria	...	...	...	...	77	615	1,918	2,233	620	2,520
<b>Totals</b>	<b>3,458</b>	<b>2,613</b>	<b>3,003</b>	<b>4,482</b>	<b>48,955</b>	<b>62,574</b>	<b>51,107</b>	<b>68,095</b>	<b>64,988</b>	<b>72,146</b>

COUNTRIES	JUNE				ELEVEN MONTHS (August 1-June 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	11	0	0	4	46	73	9	216	73	218
Hungary . . . . .	66	0	0	0	399	4	0	2	7	2
Lithuania . . . . .	0	0	0	0	0	13	0	0	20	0
Poland . . . . .	82	9	0	0	269	55	0	0	62	0
Rumania . . . . .	0	22	0	0	626	258	0	0	293	0
Czechoslovakia . .	95	148	0	2	2,923	778	0	57	884	57
Yugoslavia . . . .	0	0	0	0	0	2	0	0	2	0
Canada . . . . .	276	421	0	60	3,596	4,453	683	613	4,628	655
United States . . .	26	73	0	2	1,193	783	4	20	897	22
Argentina . . . . .	646	741	—	—	9,677	15,593	—	—	16,486	—
Chile . . . . .	22	40	0	0	207	273	0	0	282	0
Algeria . . . . .	...	...	...	...	123	284	31	368	295	384
Tunis . . . . .	24	31	0	0	115	172	0	0	212	0
Australia . . . . .	2	18	0	0	88	97	2	2	108	2
<i>Importing Countries:</i>										
Germany . . . . .	29	0	15	13	203	9	399	214	9	223
Austria . . . . .	0	0	29	126	0	0	567	1,354	0	1,464
Belgium . . . . .	0	4	73	201	7	31	811	1,338	37	1,504
Denmark . . . . .	0	0	40	68	64	66	348	489	66	500
Estonia . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	0	42	7	2	20	112	46	20	55
France . . . . .	0	0	35	511	4	7	1,085	2,705	7	3,214
Gr. Brit. and N. Ire.	0	2	489	902	24	203	5,639	7,888	203	8,494
Italy . . . . .	0	0	258	291	0	0	2,599	3,618	0	4,074
Latvia . . . . .	0	0	0	0	11	0	0	7	0	7
Norway . . . . .	0	0	0	0	2	2	13	273	2	273
Netherlands . . . .	0	0	205	300	24	42	2,513	2,253	44	2,383
Sweden . . . . .	0	29	49	97	46	150	571	1,043	181	1,105
Switzerland . . . .	0	0	258	375	0	2	4,632	4,672	2	5,033
<b>Totals . . . . .</b>	<b>1,279</b>	<b>1,538</b>	<b>1,493</b>	<b>2,959</b>	<b>19,849</b>	<b>23,370</b>	<b>20,018</b>	<b>27,185</b>	<b>24,820</b>	<b>29,676</b>
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
					EIGHT MONTHS (November 1-June 30)				TWELVE MONTHS (Nov. 1-Oct. 31)	
<i>Exporting Countries:</i>										
Bulgaria . . . . .	456	227	0	0	2,672	2,324	0	0	2,890	0
Rumania . . . . .	2,769	2,630	0	0	29,374	25,613	0	0	34,421	2
Yugoslavia . . . .	1,682	82	0	0	8,885	1,534	0	24	1,825	26
United States . . .	220	344	9	20	2,844	1,340	68	181	3,084	220
Argentina . . . . .	8,598	19,540	—	—	63,302	24,231	—	—	175,846	—
Brazil . . . . .	...	...	—	—	0	0	—	—	2	—
Java and Madura . .	...	...	—	—	1,292	2,086	—	—	2,465	—
Indo-China . . . .	520	110	—	—	2,784	1,493	—	—	3,459	—
Syria and Lebanon .	0	0	24	7	4	7	207	31	7	37
Turkey . . . . .	22	71	0	0	168	240	0	0	373	0
Egypt . . . . .	...	...	...	...	192	7	4	35	15	46
Union of South Afr.	0	278	0	0	3,510	1,903	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	238	1,808	0	0	4,833	11,901	0	17,007
Austria . . . . .	0	0	838	710	0	0	7,443	5,143	0	7,628
Belgium . . . . .	152	143	1,803	1,581	728	1,047	11,945	12,666	1,385	18,691
Denmark . . . . .	0	0	1,257	2,520	0	0	10,146	15,236	0	21,231
Spain . . . . .	0	0	62	851	0	0	1,301	4,758	0	6,931
Irish Free State . .	0	0	937	1,645	0	0	4,451	8,909	0	13,658
Finland . . . . .	0	0	97	26	0	0	639	302	0	582
France . . . . .	0	2	853	1,956	2	22	12,159	15,391	26	25,869
Gr. Brit. and N. Ire	159	364	5,741	4,568	1,142	2,079	37,668	42,003	3,208	64,058
Greece . . . . .	0	0	154	115	0	0	542	3,300	0	3,382
Hungary . . . . .	794	0	0	2	2,987	62	0	247	93	939
Italy . . . . .	941	0	216	1,989	944	4	1,292	11,588	7	15,516
Norway . . . . .	0	0	220	375	0	0	2,136	2,714	0	4,092
Netherlands . . . .	4	13	1,592	2,487	68	168	22,196	26,098	223	36,892
Poland . . . . .	0	0	11	13	0	0	53	77	0	126
Portugal . . . . .	—	—	152	139	—	—	772	814	—	1,407
Sweden . . . . .	0	0	441	642	0	0	3,166	4,057	0	6,135
Switzerland . . . .	0	0	126	192	0	2	1,407	2,286	2	3,717
Czechoslovakia . .	0	0	560	650	0	0	1,673	8,208	0	9,958
Canada . . . . .	0	0	174	331	20	7	3,219	2,899	13	3,891
Japan . . . . .	—	—	2	181	—	—	37	1,691	—	1,695
Tunis . . . . .	0	0	0	0	0	0	0	322	0	324
<b>Totals . . . . .</b>	<b>16,317</b>	<b>23,804</b>	<b>15,507</b>	<b>22,808</b>	<b>120,918</b>	<b>164,169</b>	<b>127,353</b>	<b>180,883</b>	<b>234,335</b>	<b>264,060</b>

1) See notes page 578.

COUNTRIES	JUNE				SIX MONTHS (January 1-June 30)				TWELVE MONTHS (January 1-DEC. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	9	53	0	0	66	461	0	0	871	0
Italy . . . . .	465	320	11	2	2,198	1,898	71	24	3,501	55
United States . . . . .	71	262	18	11	811	1,559	150	123	2,586	190
Brazil . . . . .	...	...	—	—	86	328	—	—	615	—
India . . . . .	4,949	4,096	22	97	26,577	32,315	254	392	48,001	683
Indo-China . . . . .	3,172	2,324	—	—	17,679	14,420	—	—	26,983	—
Siam . . . . .	2,716	3,064	—	—	18,781	17,090	—	—	34,106	—
Egypt . . . . .	...	...	...	...	820	121	2	664	1,032	210
<i>Importing Countries:</i>										
Germany . . . . .	117	77	653	646	470	496	3,552	3,428	1,047	8,481
Austria . . . . .	0	0	64	62	0	0	306	260	0	549
Belgium . . . . .	4	9	123	108	33	115	580	582	201	1,208
Denmark . . . . .	0	0	9	7	0	0	82	53	0	139
Estonia . . . . .	—	—	0	2	—	—	7	11	—	15
Irish Free State . . . . .	0	0	2	4	0	0	29	26	2	46
France . . . . .	37	82	692	816	531	441	6,195	3,792	864	8,329
Gr. Brit. and N. Irel. . . . .	9	11	254	170	60	108	1,338	1,398	163	2,747
Greece . . . . .	—	—	44	29	—	—	240	300	—	540
Hungary . . . . .	0	0	22	18	0	0	203	181	0	465
Latvia . . . . .	0	0	2	0	0	0	15	4	0	18
Lithuania . . . . .	0	0	2	2	0	0	7	7	0	20
Norway . . . . .	0	0	11	11	0	0	53	37	0	71
Netherlands . . . . .	119	143	375	304	644	825	2,233	1,530	1,863	2,639
Poland . . . . .	18	31	207	205	62	187	789	547	317	1,027
Portugal . . . . .	—	—	79	79	—	—	381	527	—	875
Sweden . . . . .	—	—	88	0	—	—	93	90	—	90
Switzerland . . . . .	0	0	24	24	0	0	366	196	0	432
Czechoslovakia . . . . .	0	0	187	119	0	0	540	516	0	1,096
Yugoslavia . . . . .	0	0	37	20	0	2	262	238	2	494
Canada . . . . .	2	0	128	99	7	9	397	441	9	593
Chile . . . . .	—	—	9	18	—	—	77	134	—	187
Ceylon . . . . .	0	0	935	908	2	2	5,154	5,540	4	10,386
Java and Madura . . . . .	...	...	...	...	4	20	2,335	2,039	73	3,303
Japan . . . . .	46	212	236	317	278	262	1,596	1,764	1,034	3,369
Syria and Lebanon . . . . .	0	0	42	24	0	0	218	183	0	392
Turkey . . . . .	0	0	0	9	0	0	20	40	0	93
Algeria . . . . .	...	...	...	...	15	2	128	101	9	198
Tunis . . . . .	0	0	0	2	0	0	15	26	0	40
Union of South Africa . . . . .	...	...	...	...	0	0	428	364	0	895
Australia . . . . .	20	4	4	2	73	51	24	31	86	49
New Zealand . . . . .	...	...	...	...	0	0	35	35	0	64
TOTALS . . . . .	11,754	10,688	4,280	4,115	69,197	70,712	28,175	25,624	123,369	50,488
<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	0	0	0	2	15	0	2	4
Lithuania . . . . .	2	2	0	0	49	97	—	—	170	0
Argentina . . . . .	3,100	3,393	—	—	18,614	22,485	—	—	44,403	—
India . . . . .	549	132	0	0	1,453	882	0	0	1,728	0
Tunis . . . . .	0	0	0	0	2	4	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	20	0	553	655	26	7	4,969	4,354	20	9,841
Belgium . . . . .	2	4	176	163	40	112	1,872	1,742	139	3,673
Denmark . . . . .	—	—	44	53	—	—	256	254	—	534
Spain . . . . .	—	—	33	42	—	—	161	240	—	494
Finland . . . . .	0	0	4	2	0	0	53	29	0	75
France . . . . .	0	0	375	366	4	4	3,164	2,648	7	5,187
Gr. Brit. and N. Irel. . . . .	0	0	317	472	4	2	2,793	3,931	4	8,294
Greece . . . . .	0	0	15	4	0	0	42	31	0	88
Hungary . . . . .	0	0	0	0	0	7	31	0	9	29
Italy . . . . .	0	0	119	139	0	0	814	721	0	1,512
Latvia . . . . .	0	0	2	31	18	51	33	53	75	403
Norway . . . . .	0	0	57	18	0	0	216	185	0	705
Netherlands . . . . .	2	2	306	611	31	66	4,890	5,307	75	9,912
Poland . . . . .	0	0	42	18	0	2	258	73	4	271
Sweden . . . . .	—	—	62	117	—	—	509	571	—	957
Czechoslovakia . . . . .	0	0	55	77	2	2	225	315	2	798
Yugoslavia . . . . .	0	0	0	29	0	0	51	53	0	115
Canada . . . . .	112	0	0	79	243	2	0	256	205	256
United States . . . . .	—	—	591	287	—	—	2,101	3,058	—	4,502
Japan . . . . .	—	—	31	2	—	—	212	110	—	148
Australia . . . . .	0	0	4	29	0	0	220	234	0	450
TOTALS . . . . .	3,787	3,535	2,784	3,165	20,499	23,692	22,903	24,145	46,845	47,618



COUNTRIES	JUNE				- SIX-MONTHS (January-I June 30)				TWELVE MONTHS (January I-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	441	62	2	33	820	300	148	725	1,565	802
Denmark . . . . .	34,375	35,349	9	66	170,733	181,580	459	758	347,886	922
Estonia . . . . .	2,178	3,609	0	0	6,916	11,665	0	0	27,626	0
Irish Free State . . . . .	9,295	7,476	2	26	18,609	11,466	4	2,282	36,932	2,632
Finland . . . . .	1,477	2,407	225	0	13,056	18,609	225	0	32,020	0
Hungary . . . . .	780	421	0	0	3,560	1,724	0	0	4,495	0
Latvia . . . . .	3,937	4,200	0	0	15,496	16,213	0	0	41,002	2
Lithuania . . . . .	3,034	4,365	0	0	7,926	8,613	0	0	21,883	0
Norway . . . . .	73	24	2	46	734	1,786	7	64	2,421	90
Netherlands . . . . .	9,645	2,416	04	553	38,103	18,521	683	8,360	44,926	9,323
Poland . . . . .	633	714	2	7	783	2,262	2	106	2,707	866
Sweden . . . . .	9,989	2,665	2	0	14,553	15,197	22	13	29,875	33
U. S. S. R. . . . .	—	—	—	—	4,753	6,193	—	—	68,198	—
Argentina . . . . .	344	2,584	—	—	18,854	32,582	—	—	55,925	—
India . . . . .	11	18	35	51	106	141	231	234	260	428
Syria and Lebanon . . . . .	4	7	196	282	60	168	683	1,052	315	1,867
Australia . . . . .	5,362	12,771	0	0	101,878	104,603	—	0	229,105	0
New Zealand . . . . .	21,530	13,534	—	—	139,908	112,522	—	—	244,787	—
<i>Importing Countries:</i>										
Germany . . . . .	2	4	11,482	10,809	9	143	57,929	77,753	478	153,264
Belgium . . . . .	112	271	983	2,090	273	1,226	16,235	29,348	1,841	46,760
Spain . . . . .	0	2	0	2	15	22	4	26	44	42
France . . . . .	787	705	198	884	3,318	3,400	15,955	15,016	7,921	26,140
Gr. Brit. and N. Irel. . . . .	807	1,437	95,511	87,689	5,589	29,421	513,573	467,302	35,693	946,298
Greece . . . . .	—	—	29	40	—	—	276	734	—	1,197
Italy . . . . .	128	148	40	203	690	631	1,400	3,269	827	3,818
Switzerland . . . . .	0	0	18	556	2	2	798	6,786	7	8,151
Czechoslovakia . . . . .	0	0	212	664	2	26	423	1,980	26	2,703
Canada . . . . .	29	141	0	2	181	743	1,360	183	3,505	238
United States . . . . .	88	170	104	90	547	765	661	686	1,607	1,014
Ceylon . . . . .	—	—	71	82	—	—	340	322	—	602
Java and Madura . . . . .	—	—	—	—	—	—	4,019	4,109	—	8,766
Japan . . . . .	—	—	37	20	—	—	190	86	—	163
Algeria . . . . .	—	—	—	—	11	22	1,704	1,702	35	3,955
Egypt . . . . .	—	—	—	—	143	302	364	324	384	814
Tunis . . . . .	0	0	115	93	4	2	880	620	4	1,305
<b>Totals . . . . .</b>	<b>98,061</b>	<b>95,500</b>	<b>109,379</b>	<b>104,288</b>	<b>567,632</b>	<b>580,850</b>	<b>618,575</b>	<b>623,840</b>	<b>1,244,300</b>	<b>1,222,195</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	33	77	0	0	891	408	0	2	2,601	4
Denmark . . . . .	2,778	1,552	4	18	12,013	5,886	42	86	14,535	130
Finland . . . . .	1,008	655	9	2	4,142	3,395	18	11	7,225	26
Italy . . . . .	6,133	5,016	1,188	1,063	28,413	32,992	4,647	4,251	66,291	8,807
Lithuania . . . . .	117	132	0	0	567	816	2	2	1,768	7
Norway . . . . .	309	326	11	15	1,859	1,642	88	123	3,644	240
Netherlands . . . . .	12,200	16,766	49	79	68,319	80,696	357	527	170,061	1,076
Poland . . . . .	9	24	42	66	95	498	243	293	767	586
Switzerland . . . . .	4,555	3,867	282	386	22,763	20,373	1,616	2,626	43,700	4,755
Czechoslovakia . . . . .	214	315	196	351	1,356	3,532	1,254	1,415	6,124	3,071
Yugoslavia . . . . .	207	93	4	11	862	725	37	90	2,617	150
Canada . . . . .	4,098	4,833	68	110	7,037	9,076	357	538	86,940	1,166
Australia . . . . .	236	212	4	0	6,076	3,078	31	7	8,801	60
New Zealand . . . . .	17,478	13,234	0	0	125,686	110,933	2	2	198,789	2
<i>Importing Countries:</i>										
Germany . . . . .	364	271	8,292	10,044	2,330	2,026	43,896	48,006	4,237	108,688
Austria . . . . .	353	445	249	313	2,147	1,206	1,279	2,313	3,982	3,732
Belgium . . . . .	29	33	4,378	4,804	187	284	22,317	21,597	551	45,660
Spain . . . . .	31	42	154	190	593	141	858	895	238	2,480
Irish Free State . . . . .	0	0	88	176	0	24	311	1,010	37	2,019
France . . . . .	1,969	2,152	5,648	5,598	13,312	15,335	27,536	24,870	29,211	52,133
Gr. Brit. and N. Irel. . . . .	459	569	34,165	27,064	3,093	3,543	173,249	164,035	7,242	336,733
Greece . . . . .	126	40	57	62	531	62	635	1,135	620	1,753
Hungary . . . . .	7	2	0	0	24	24	—	—	33	—
Portugal . . . . .	—	—	42	50	—	—	172	218	—	608
Sweden . . . . .	—	—	68	88	—	—	419	450	—	1,045
United States . . . . .	163	159	6,863	3,801	697	818	25,785	25,486	1,534	55,629
India . . . . .	0	0	73	75	—	—	472	434	—	950
Java and Madura . . . . .	—	—	—	—	—	—	646	540	—	1,642
Syria and Lebanon . . . . .	4	0	51	49	13	20	895	452	68	1,195
Algeria . . . . .	—	—	—	—	64	75	4,700	3,871	159	11,100
Egypt . . . . .	—	—	—	—	77	112	2,304	1,817	254	5,260
Tunis . . . . .	4	2	377	159	24	—	1,420	1,034	13	2,191
<b>Totals . . . . .</b>	<b>52,879</b>	<b>50,817</b>	<b>67,362</b>	<b>54,579</b>	<b>303,171</b>	<b>297,729</b>	<b>315,599</b>	<b>308,147</b>	<b>662,044</b>	<b>652,509</b>

COUNTRIES	JUNE				ELEVEN MONTHS (August 1-June 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	3,371	1,951	71	95	41,917	44,355	593	578	46,787	620
Argentina . . .	66	110	—	—	481	492	—	—	593	—
Brazil . . .	—	—	—	—	18	181	—	—	183	—
India . . .	1,235	487	71	212	9,760	6,673	816	2,143	7,075	2,249
Egypt . . .	—	—	—	—	5,216	6,757	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . .	97	112	1,016	485	1,177	1,521	8,539	7,864	1,640	8,327
Austria . . .	0	0	46	31	0	0	388	520	0	553
Belgium . . .	33	24	99	93	267	324	1,691	1,285	348	1,349
Denmark . . .	—	—	11	15	—	—	139	126	—	134
Spain . . .	2	2	284	205	15	22	1,889	1,916	22	2,070
Estonia . . .	0	0	4	9	0	0	53	71	0	75
Finland . . .	0	0	13	15	0	0	159	150	0	159
France . . .	37	15	564	421	340	463	6,647	3,834	494	4,286
Gr. Brit. and N. Irel.	37	90	1,173	924	441	439	11,468	11,768	485	12,452
Greece . . .	0	0	9	9	0	0	168	181	0	192
Hungary . . .	0	0	33	13	0	0	373	315	0	333
Italy . . .	0	0	384	309	0	0	3,827	3,794	0	4,037
Latvia . . .	0	0	9	4	0	0	79	49	0	51
Norway . . .	0	0	4	2	0	0	51	42	0	44
Netherlands . . .	0	0	51	53	7	7	690	820	7	858
Poland . . .	0	0	141	97	15	20	1,093	968	22	1,074
Portugal . . .	—	—	40	51	—	—	434	401	—	434
Sweden . . .	—	—	29	57	—	—	487	529	—	564
Switzerland . . .	0	0	49	33	2	4	527	476	4	505
Czechoslovakia . . .	9	11	117	150	97	128	1,653	1,896	137	2,002
Yugoslavia . . .	0	0	15	11	0	0	168	190	0	201
Canada . . .	—	—	75	46	—	—	888	937	—	974
Japan . . .	0	0	0	787	373	1,041	8,426	15,653	1,041	16,484
Algeria . . .	—	—	—	—	—	—	7	4	—	7
<b>Totals</b> . . .	<b>4,887</b>	<b>2,802</b>	<b>4,308</b>	<b>4,127</b>	<b>60,130</b>	<b>62,431</b>	<b>51,253</b>	<b>56,510</b>	<b>66,342</b>	<b>60,034</b>

**Wool. — (Thousand lb.).**

COUNTRIES	JUNE				ELEVEN MONTHS (August 1-June 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	1,660	377	68	60	10,681	7,776	639	675	9,949	948
Hungary . . .	146	214	97	88	2,097	1,442	1,369	1,054	2,344	1,285
Argentina . . . { a)	35,345	17,946	—	—	284,404	228,230	—	—	254,013	—
Chile . . . { b)	1,609	472	—	—	13,417	6,508	—	—	8,177	—
India . . .	1,920	534	—	—	20,342	24,895	—	—	25,175	—
Syria and Lebanon . .	4,731	1,140	243	384	36,795	30,605	6,658	4,079	35,402	5,020
Algeria . . .	498	161	66	75	3,102	2,959	1,054	694	3,935	985
Egypt . . .	—	—	—	—	5,816	4,592	1,316	895	6,856	1,252
Un. of S. Africa { a)	12,284	16,473	—	—	2,293	1,071	35	2	1,413	4
Australia . . . { b)	679	467	—	—	255,323	285,145	0	0	298,046	0
New Zealand . . . { a)	26,156	26,114	40	95	5,514	4,341	615	1,239	5,296	1,261
Poland . . . { b)	6,323	4,416	0	0	816,531	729,527	4,173	1,989	762,756	2,008
Yugoslavia . . . { a)	6,618	1,464	0	0	63,136	48,394	24	11	58,535	15
Totals . . .	9,522	2,877	0	7	213,995	175,200	0	2	177,836	2
<i>Importing Countries:</i>										
Germany . . . { a)	580	216	24,295	23,105	53,312	36,540	9	20	43,314	29
Austria . . . { b)	527	679	4,222	2,527	3,256	9,182	273,343	210,040	9,780	241,314
Belgium . . . { a)	66	22	1,728	1,332	7,015	8,400	32,137	26,202	9,681	31,656
Denmark . . . { b)	8,541	4,325	15,986	13,631	154	79	15,133	12,370	82	13,982
Spain . . . { a)	2,299	1,671	412	212	81,706	14,401	171,743	100,502	18,715	116,938
Finland . . . { b)	64	2	423	430	18,292	18,960	3,355	2,540	22,465	3,036
France . . .	381	40	802	864	238	146	4,392	3,772	157	4,409
Gr. Brit. and N. Irel.	22	0	377	236	2,112	2,006	8,583	7,571	2,321	12,377
Greece . . .	5,223	3,516	51,796	41,189	73	84	3,280	2,271	86	2,762
Italy . . . { a)	47,353	34,227	64,909	80,398	33,515	38,607	494,688	341,442	45,631	393,116
Norway . . . { b)	37	71	86	123	356,522	271,833	867,090	816,198	315,628	888,010
Netherlands . . . { a)	108	75	21,870	18,550	597	146	2,224	1,894	300	2,094
Poland . . . { b)	1,069	90	1,607	1,116	419	1,082	149,529	129,661	1,232	145,252
Sweden . . .	165	86	123	212	3,937	1,343	13,243	12,719	1,620	14,290
Switzerland . . .	395	106	836	269	809	664	1,808	2,030	756	2,355
Czechoslovakia . . .	152	73	699	818	2,337	1,596	7,619	5,891	1,933	7,229
Yugoslavia . . . { a)	62	55	3,633	2,857	988	626	7,238	6,479	761	8,148
Canada . . . { b)	—	—	1,457	1,025	1,202	1,532	30,838	23,259	1,687	27,084
United States . . .	29	9	1,627	2,026	—	—	15,106	13,346	—	17,745
Japan . . .	123	82	2,782	4,085	231	381	17,626	17,719	397	20,150
Tunis . . .	0	7	675	209	1,144	1,748	25,657	28,640	1,892	32,030
Totals . . .	399	172	1,226	816	132	99	3,128	2,502	152	2,937
<i>Importing Countries:</i>										
Germany . . . { a)	174	37	10,897	2,696	3,307	4,233	8,364	5,807	5,159	6,277
France . . . { b)	11	0	14,875	12,935	624	2,008	51,123	81,238	3,893	82,779
Italy . . .	79	46	75	46	73	77	204,479	178,480	77	192,901
Totals . . .	175,351	118,262	227,932	212,544	2,305,765	1,966,601	2,428,123	2,045,614	2,137,624	2,282,208

a) = Wool, greasy; b) = Wool, scoured. — x) See notes page 578.

COUNTRIES	JUNE		TWELVE MONTHS (July 1-June 30)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	JUNE		TWELVE MONTHS (July 1-June 30)		TWELVE MONTHS (July 1-June 30)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1,427,101	1,905,594	—	Ceylon . . . . .	21,063	26,372	241,791	245,982	—
India . . . . .	820	1,881	18,600	17,926	—	India . . . . .	14,634	21,546	367,333	342,950	—
Java and Madura . . . . .	...	...	77,462	47,863	—	Java and Madura . . . . .	...	...	147,719	149,472	—
						Japan . . . . .	3,265	2,758	29,736	24,590	—
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	176	99	1,310	1,649	—	Belgium . . . . .	0	2	9	22	—
Belgium . . . . .	24	106	410	9,654	—	Irish Free State . . . . .	0	0	31	258	—
France . . . . .	68	0	128	15	—	France . . . . .	0	0	15	35	—
Netherlands . . . . .	1,142	1,402	16,261	14,709	—	Gr. Brit. and N. Irel. . . . .	3,922	4,028	82,228	80,092	—
Portugal . . . . .	132	119	2,004	1,270	—	Netherlands . . . . .	9	9	128	143	—
Switzerland . . . . .	24	15	320	613	—	United States . . . . .	13	13	295	474	—
Canada . . . . .	4	2	51	42	—	Syria and Lebanon . . . . .	0	0	2	20	—
United States . . . . .	2,070	1,208	13,358	22,593	—	Algeria . . . . .	...	...	33	1	46
Ceylon . . . . .	0	6	7	11	—	Union of S. Africa . . . . .	...	...	15	1	117
Syria and Lebanon . . . . .	0	2	11	46	—	Australia . . . . .	93	44	791	549	—
Australia . . . . .	7	2	46	55	—	New Zealand . . . . .	...	...	99	1	73
TOTALS . . . . .	—	—	—	—	—	TOTALS . . . . .	42,999	54,772	870,225	844,823	—
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	22,569	22,459	279,327	307,608	—	Germany . . . . .	769	646	10,102	10,494	—
Austria . . . . .	780	1,823	13,104	17,410	—	Austria . . . . .	31	99	888	1,138	—
Belgium . . . . .	7,520	4,594	95,921	114,725	—	Belgium . . . . .	35	37	597	661	—
Bulgaria . . . . .	99	119	919	1,658	—	Denmark . . . . .	90	150	1,265	1,380	—
Denmark . . . . .	4,771	4,758	49,022	66,439	—	Spain . . . . .	31	18	289	280	—
Spain . . . . .	3,843	3,673	43,385	50,224	—	Estonia . . . . .	7	0	71	172	—
Estonia . . . . .	22	9	101	298	—	Irish Free State . . . . .	1,307	1,129	22,836	25,122	—
Irish Free State . . . . .	53	40	584	522	—	Finland . . . . .	20	11	223	249	—
Finland . . . . .	3,210	3,047	33,819	32,481	—	France . . . . .	249	289	3,199	3,419	—
France . . . . .	33,495	35,199	424,502	427,557	—	Gr. Britain and N. Ireland . . . . .	30,651	33,640	572,897	550,364	—
Gr. Britain and N. Ireland . . . . .	2,624	2,857	35,404	36,648	—	Greece . . . . .	11	2	353	699	—
Greece . . . . .	538	514	7,976	13,010	—	Hungary . . . . .	15	22	547	562	—
Hungary . . . . .	547	494	5,818	6,041	—	Italy . . . . .	24	33	265	333	—
Italy . . . . .	7,361	7,941	84,574	93,366	—	Latvia . . . . .	4	11	117	130	—
Latvia . . . . .	2	24	324	375	—	Lithuania . . . . .	2	4	121	119	—
Lithuania . . . . .	42	22	373	445	—	Norway . . . . .	20	20	381	386	—
Norway . . . . .	2,511	2,848	35,944	38,189	—	Netherlands . . . . .	2,174	2,842	30,069	30,836	—
Netherlands . . . . .	8,131	7,696	97,738	103,371	—	Poland . . . . .	362	306	3,922	4,317	—
Poland . . . . .	1,411	1,237	15,296	17,185	—	Portugal . . . . .	35	24	423	648	—
Portugal . . . . .	734	463	10,986	10,657	—	Sweden . . . . .	62	53	875	858	—
Sweden . . . . .	6,261	6,087	99,449	107,586	—	Switzerland . . . . .	75	157	2,097	1,792	—
Switzerland . . . . .	2,269	2,875	37,168	34,286	—	Czechoslovakia . . . . .	13	68	1,321	1,737	—
Czechoslovakia . . . . .	1,607	1,982	25,441	32,386	—	Yugoslavia . . . . .	22	22	419	622	—
Yugoslavia . . . . .	1,265	1,140	14,207	17,434	—	Canada . . . . .	1,321	1,105	38,480	39,031	—
Canada . . . . .	2,044	2,597	30,003	31,963	—	United States . . . . .	5,847	7,277	94,810	90,460	—
United States . . . . .	128,971	142,404	1,458,438	1,629,014	—	Chile . . . . .	260	478	3,834	5,170	—
Chile . . . . .	108	556	3,979	9,308	—	Syria and Lebanon . . . . .	9	13	198	586	—
Ceylon . . . . .	172	2	2,513	3,572	—	Turkey . . . . .	209	117	2,341	1,504	—
Japan . . . . .	445	1,237	4,332	6,724	—	Algeria . . . . .	...	...	3,836	2,335	—
Syria and Lebanon . . . . .	192	139	2,218	2,324	—	Egypt . . . . .	...	...	15,298	13,001	—
Turkey . . . . .	536	1,127	10,677	8,841	—	Tunis . . . . .	198	240	2,654	6,669	—
Algeria . . . . .	...	...	28,089	28,019	—	Union of S. Africa . . . . .	...	...	10,926	11,942	—
Egypt . . . . .	...	...	14,723	14,963	—	Australia . . . . .	4,061	3,977	48,436	44,899	—
Tunis . . . . .	249	247	3,501	3,190	—	New Zealand . . . . .	...	...	12,789	9,775	—
Un. of S. Africa . . . . .	...	...	24,853	23,856	—						
Australia . . . . .	500	569	3,578	3,510	—						
New Zealand . . . . .	...	...	302	412	—						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	46	110	106	—	India . . . . .	143	205	5,505	6,486	—
						Java and Madura . . . . .	...	...	4,517	9,310	—
TOTALS . . . . .	244,882	260,825	2,998,698	3,295,702	—	TOTALS . . . . .	48,057	52,995	896,901	877,486	—

2) See notes page 578.

COUNTRIES	JUNE		NINE MONTHS (Oct. 1-June 30)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	JUNE		ELEVEN MONTHS (August 1-June 30)		TWELVE MONTHS (August 1- July 31)	
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32	
Cacao. — (Thousand lb.).						Total Wheat and Flour *)						
EXPORTS.						(Thousand cents).						
Exporting Countries:						a) NET EXPORTS.						
Grenada . . . . .	...	...	4)	3,042	4)	9,656	Bulgaria . . . . .	146	258	1,773	6,512	6,691
Dominican Republ. . . . .	7,209	9,504	33,676	31,462	35,977	5)	Spain . . . . .	5)	756	4,045	10,626	10,752
Brazil . . . . .	...	...	1)	167,270	1)	210,683	586	2	31	53	55	55
Ecuador . . . . .	...	...	1)	15,607	1)	35,669	2	2	2	2	2	2
Trinidad . . . . .	4,233	3,713	37,887	32,547	39,617	265	194	553	1,726	1,929	1,929	
Venezuela . . . . .	...	...	3)	16,976	3)	35,439	0	227	31	22,271	22,335	
Ceylon . . . . .	445	364	7,154	8,669	9,266	...	...	1)	9,489	1)	39,483	39,820
Java and Madura . . . . .	...	...	1)	1,393	1)	3,807	2	529	575	8,814	8,935	
Cameroon . . . . .	1,001	1,184	33,283	23,889	27,315	10,338	11,001	145,640	110,692	123,625	123,625	
Ivory Coast . . . . .	3,752	326	59,223	50,927	54,578	560	4,753	17,004	63,264	65,566	65,566	
Gold Coast . . . . .	36,383	14,165	457,051	413,739	462,878	8,265	5,346	69,622	82,356	83,679	83,679	
Nigeria . . . . .	...	...	1)	135,799	1)	123,929	5)	2	5)	35	46	
St. Thomas and Prince Is. . . . .	...	...	2)	11,039	2)	25,867	5)	82	5)	1,069	1,118	
Togoland . . . . .	146	0	13,027	13,285	13,916	42	26	174	917	922	922	
Importing Countries:						...	...	...	...	...	...	...
Germany . . . . .	0	0	44	474	496	174	1,704	2,714	3,635	5,104	5,104	
Belgium . . . . .	2	203	459	919	1,508	3,960	6,843	83,514	87,511	92,453	92,453	
France . . . . .	0	0	66	2	4	TOTALS . . .						
Netherlands . . . . .	507	335	2,956	4,861	6,740	24,340	31,723	339,563	441,061	466,538	466,538	
United States . . . . .	679	344	8,038	5,950	7,011							
Australia . . . . .	134	0	157	141	143							
TOTALS . . .	54,491	30,138	1,004,147	895,712	1,104,519							
IMPORTS.						b) NET IMPORTS.						
Importing Countries:						Importing Countries:						
Germany . . . . .	13,446	9,275	132,842	143,314	175,744	Germany . . . . .	1,400	4,321	1,942	10,518	13,913	
Austria . . . . .	454	1,093	5,712	10,174	13,651	1,294	917	7,326	7,509	8,113	8,113	
Belgium . . . . .	814	1,550	12,829	18,623	21,588	1,400	3,104	22,002	25,316	27,862	27,862	
Bulgaria . . . . .	37	112	608	1,151	1,323	388	617	6,621	9,817	10,412	10,412	
Denmark . . . . .	1,323	928	7,322	6,665	7,756	0	1,365	6)	1,501	6,457	6,457	
Spain . . . . .	2,000	2,198	18,986	17,525	19,701	0	9	0	265	262	262	
Estonia . . . . .	60	13	300	437	452	891	981	10,060	10,809	11,715	11,715	
Irish Free State . . . . .	146	35	2,513	933	1,149	225	185	2,328	2,324	2,555	2,555	
Finland . . . . .	11	4	152	132	181	1,034	6,671	17,370	41,573	47,137	47,137	
France . . . . .	7,079	7,458	74,587	70,438	91,214	10,699	11,316	118,614	132,505	143,918	143,918	
Gr. Brit. and N. Irel. . . . .	12,203	8,483	123,159	108,556	138,407	948	1,177	10,787	13,285	14,204	14,204	
Greece . . . . .	71	44	1,660	2,590	2,844	425	4,048	6,398	18,279	19,930	19,930	
Hungary . . . . .	481	278	4,870	4,039	5,573	0	29	15	423	575	575	
Italy . . . . .	1,852	1,495	13,518	11,962	15,053	500	397	4,566	4,817	5,090	5,090	
Latvia . . . . .	146	88	924	1,336	1,607	1,316	1,801	14,368	17,152	18,636	18,636	
Lithuania . . . . .	57	64	589	498	615	33	137	761	873	1,660	1,660	
Norway . . . . .	71	106	3,153	4,597	5,033	60	672	1,881	3,805	4,096	4,096	
Netherlands . . . . .	10,174	3,148	84,279	76,626	92,202	7)	844	7)	10,549	7)	11,645	12,666
Poland . . . . .	1,113	1,175	11,266	8,898	11,444	1,572	1,140	5,523	13,530	14,758	14,758	
Portugal . . . . .	79	46	765	717	855	146	6)	1,210	6)	6)	6)	
Sweden . . . . .	780	522	6,856	9,808	10,921	...	...	29	481	511	542	
Switzerland . . . . .	1,404	919	14,372	10,060	11,197	76	6)	604	6)	6)	6)	
Czechoslovakia . . . . .	1,356	1,440	14,017	16,599	21,526	33	24	417	485	518	518	
Yugoslavia . . . . .	163	110	926	1,144	1,501	897	2,447	3,360	12,712	12,584	12,584	
Canada . . . . .	1,784	1,466	14,612	13,345	16,444	...	...	1)	1,113	1)	1,329	1,497
United States . . . . .	40,539	16,361	391,941	335,657	420,143	68	117	849	161	223	223	
Japan . . . . .	146	417	1,788	1,744	1,960	...	...	1)	254	1)	3,915	4,231
Australia . . . . .	445	1,484	9,037	8,618	11,252	...	...	1)	161	1)	939	1,049
New Zealand . . . . .	...	...	1)	1,781	1)	1,554	...	...	833	1)	381	569
TOTALS . . .	98,234	60,312	955,364	887,262	1,102,890	TOTALS . . .	24,294	42,386	250,393	346,379	385,172	385,172

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 May. — 2) Data up to 30 April. — 3) Data up to 31 March. — 4) Data up to 28 February. — 5) See Net Imports. — 6) See Net Exports. — 7) Wheat only.

## STOCKS

TOTAL STOCKS OF HOME GROWN CEREALS IN CANADA ON 31 JULY.

PRODUCTS	1933	1932	1931	1930	1929	1933	1932	1931	1930	1929
	1,000 centals					1,000 bushels				
Wheat . . . . .	127,044	78,569	80,447	66,657	62,630	211,740	130,949	134,079	111,095	104,383
Rye . . . . .	3,256	3,013	8,084	5,147	2,363	5,815	5,381	14,456	9,191	4,220
Barley . . . . .	642	3,438	14,142	10,980	5,290	1,338	7,162	29,462	22,875	11,021
Oats 1) . . . . .	14,295	10,191	21,567	7,338	15,356	44,673	31,846	67,396	22,932	47,988

1) For oats the bushel is of 32 lbs.

COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	August 1933	July 1933	June 1933	August 1932	August 1931	August 1933	July 1933	June 1933	August 1932	August 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	117,964	119,408	122,554	71,237	63,119	196,607	199,013	203,424	118,728	105,199
U.S. in Canada . . . . .	2,244	2,428	2,881	9,218	13,760	3,740	4,047	4,802	15,364	22,933
U.S. in the United States . .	80,968	74,158	70,522	105,551	140,236	134,946	123,596	117,536	175,918	233,727
Canad. in the United States .	4,018	3,022	2,765	2,824	3,747	6,697	5,036	4,609	4,707	6,244
Total . . . . .	205,194	199,016	198,222	188,830	220,862	341,990	331,692	330,371	314,717	368,103
<b>RYE:</b>										
Canadian in Canada . . . .	3,125	2,959	2,835	2,891	6,774	5,581	5,284	5,062	5,163	12,096
U.S. in Canada . . . . .	1	1	1	90	1,004	1	1	1	160	1,792
U.S. in the United States . .	6,313	5,919	4,931	5,015	5,509	11,273	10,570	8,806	8,955	9,838
Canad. in the United States .	108	119	119	194	1	192	213	213	347	2
Total . . . . .	9,547	8,998	7,886	8,190	13,288	17,047	16,068	14,082	14,625	23,728
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,712	3,337	3,158	1,699	4,872	7,733	6,952	6,580	3,540	10,151
U.S. in Canada . . . . .	0	10	10	0	22	0	21	21	1	45
U.S. in the United States . .	7,002	5,611	5,847	1,651	3,153	14,587	11,690	12,181	3,440	6,568
Canad. in the United States .	0	0	0	0	57	0	0	0	1	119
Total . . . . .	10,714	8,958	9,015	3,350	8,104	22,320	18,663	18,782	6,982	16,883
<b>OATS: (1)</b>										
Canadian in Canada . . . .	4,166	3,505	3,334	2,129	2,960	13,018	10,952	10,419	6,652	9,248
U.S. in Canada . . . . .	225	230	144	49	70	702	719	449	153	220
U.S. in the United States . .	11,388	8,820	7,667	4,041	2,567	35,589	27,564	23,959	12,627	8,021
Canad. in the United States .	0	0	0	0	4	0	0	0	0	13
Total . . . . .	15,779	12,555	11,145	6,219	5,601	49,309	39,235	34,827	19,432	17,502
<b>MAIZE:</b>										
U.S. in Canada . . . . .	3,985	1,863	1,589	253	109	7,116	3,326	2,837	451	195
Of other origin in Canada . .	466	507	623	552	260	832	905	1,113	985	463
U.S. in the United States . .	35,433	25,838	21,716	6,241	4,683	63,274	46,140	38,779	11,144	8,363
Total . . . . .	39,884	28,208	23,928	7,046	5,052	71,222	50,371	42,729	12,580	9,021

1) For oats the bushel is of 32 lbs.

## QUANTITY OF WHEAT EXPORTABLE FROM ARGENTINE.

According to a Government communication there were in the country at the end of July 1933 25,091,000 centals (41,817,000 bushels) of wheat available for export, against 23,553,000 c. (39,221,000 b.) and 35,900,000 c. (59,833,000 b.) respectively at the corresponding dates of 1932 and 1931.

## QUANTITY OF WHEAT EXPORTABLE FROM AUSTRALIA.

According to a Government communication there were in the country on 1st August 1933 23,462,000 centals (39,104,000 bushels) of wheat available for export, against 19,594,000 c. (32,657,000 b.) and 19,800,000 c. (33,000,000 b.) respectively at the corresponding dates of 1932 and 1931.

## TOTAL STOCKS OF WHEAT AND WHEAT-FLOUR IN THE UNITED STATES ON 1ST JULY 1).

LOCATION	1933	1932	1931	1933	1932	1931
	1,000 centals			1,000 bushels		
On farms . . . . .	47,763	54,170	22,345	79,605	90,284	37,242
In interior mills and elevators . . . . .	36,914	24,951	18,151	61,524	41,585	30,252
Commercial wheat in store . . . . .	74,158	101,043	122,380	123,596	168,405	203,967
In merchant mills and elevators 2) . . . . .	57,252	38,712	13,085	95,420	64,520	21,808
In transit to merchant mills and bought to arrive 2)	9,472	6,053	7,319	15,786	10,088	12,198
Stored for others by merchant mills 2) . . . . .	5,970	4,316	10,501	9,950	7,194	17,502
<i>Total U. S. wheat as grain . . .</i>	<i>231,529</i>	<i>229,246</i>	<i>193,781</i>	<i>385,881</i>	<i>382,076</i>	<i>322,969</i>
Flour (in terms of grain) in merchant mills and elevators 2) . . . . .	8,820	9,472	8,287	14,700	15,786	13,812
<i>Total U. S. wheat and flour (in terms of grain). . .</i>	<i>240,349</i>	<i>238,718</i>	<i>302,068</i>	<i>400,581</i>	<i>397,862</i>	<i>336,781</i>
Canadian wheat in store in bond in the U. S. . .	3,022	2,719	3,245	5,036	4,532	5,409
<b>TOTAL WHEAT IN THE U. S. . . .</b>	<b>243,371</b>	<b>241,437</b>	<b>205,313</b>	<b>405,617</b>	<b>402,394</b>	<b>342,190</b>

1) Incomplete data: wheat in transit on rail or water with other destination than to merchant mills and attached elevators and wheat flour in other positions than in merchant mills and elevators are not included. — 2) Raised to represent wheat and wheat flour in all merchant mills and elevators. See also special table, on stocks in these mills, etc.

## WHEAT AND WHEAT-FLOUR STOCKS HELD BY COMMERCIAL MILLS IN THE UNITED STATES 1).

Specification and situation	Last day of month					Last day of month				
	June 1933	March 1933	Dec. 1932	June 1932	June 1931	June 1933	March 1933	Dec. 1932	June 1932	June 1931
	1,000 centals					1,000 bushels or barrels				
Wheat held by mills and mill elevators attached to mills . . . . .	54,652	49,915	62,119	36,196	12,601	91,086	83,192	103,531	60,326	21,001
Wheat in transit to merchant mills and bought to arrive . . . . .	9,046	6,278	7,250	5,659	7,048	15,076	10,464	12,083	9,432	11,746
Wheat-flour in mills and warehouses, and in transit, sold and unsold . . . . .	5,866	7,286	7,864	6,254	5,547	2,993	3,718	4,012	3,191	2,830
<b>TOTAL 2) . . .</b>	<b>72,138</b>	<b>66,678</b>	<b>80,683</b>	<b>50,854</b>	<b>27,629</b>	<b>120,229</b>	<b>111,131</b>	<b>134,470</b>	<b>84,756</b>	<b>46,048</b>

1) Partial census, including mills accounting for over 90% of the total capacity of all commercial mills; see article about cereal stocks on page 502 of Crop Report for August 1931. — 2) Including flour in terms of grain.

QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	August 1933	July 1933	June 1933	August 1932	August 1931	August 1933	July 1933	June 1933	August 1932	August 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of grain) . . . . .	18,970	18,984	23,669	18,826	22,738	31,616	31,640	39,448	31,372	37,896
Rye. . . . .	706	648	701	1,186	408	1,260	1,157	1,251	2,117	729
Barley. . . . .	2,112	2,696	1,140	1,620	2,184	4,400	5,617	2,375	3,375	4,550
Oats . . . . .	534	890	928	1,040	1,402	1,670	2,780	2,900	3,250	4,380
Maize . . . . .	13,474	12,821	14,414	20,846	26,626	24,060	22,894	25,740	37,226	47,546

Authority: *Broomhall's Corn Trade News*.

STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	July 1933	June 1933	May 1933	July 1932	July 1933	June 1933	May 1933	July 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	7,774	10,232	12,842	3,446	12,956	17,052	21,403	5,743
Flour for bread . . . . .	2,619	2,652	2,540	2,017	1,336	1,353	1,296	1,029
TOTAL 2) . . . . .	11,266	13,768	16,228	6,136	18,775	22,945	27,048	10,225
RYE:								
Grain . . . . .	6,964	9,004	11,526	3,534	12,437	16,078	20,582	6,311
Flour for bread . . . . .	906	1,199	1,327	569	462	612	677	290
TOTAL 2) . . . . .	8,173	10,602	13,296	4,292	14,593	18,934	23,741	7,664
BARLEY . . . . .	2,169	1,138	1,545	1,561	4,520	2,370	3,220	3,252
OATS . . . . .	705	1,153	1,570	536	2,205	3,603	4,905	1,674

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First day of the month					First day of the month				
	August 1933	July 1933	June 1933	August 1932	August 1931	August 1933	July 1933	June 1933	August 1932	August 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	5,856	6,816	7,104	5,712	5,640	9,760	11,360	11,880	9,520	9,400
Flour as grain . . . . .	792	576	744	840	744	1,320	960	1,240	1,400	1,240
TOTAL . . . . .	6,648	7,392	7,848	6,552	6,384	11,080	12,320	13,080	10,920	10,640
Barley. . . . .	560	640	880	400	640	1,167	1,333	1,833	833	1,333
Oats . . . . .	560	528	512	480	784	1,750	1,650	1,600	1,500	2,450
Maize . . . . .	2,760	2,712	1,368	2,496	1,536	4,929	4,843	2,443	4,457	2,743

1) Imported cereals.

Authority: *Broomhall's Corn Trade News*.

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	July 1933	June 1933	May 1933	July 1932	July 1931	July 1933	June 1933	May 1933	July 1932	July 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . . .	6,640	6,885	6,856	5,990	4,818	1,351	1,401	1,395	1,219	996
In public storage and at compresses . . . .	28,231	31,085	36,014	32,973	21,914	5,739	6,319	7,321	6,703	4,524
TOTAL . . . .	34,871	37,970	42,870	38,963	26,732	7,090	7,720	8,716	7,922	5,520

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	August 1933	July 1933	June 1933	August 1932	August 1931	August 1933	July 1933	June 1933	August 1932	August 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Bombay 1) . . . .	3,272	3,508	3,824	3,152	2,805	685	734	800	659	587
Alexandria . . . .	2,352	2,801	3,282	3,745	4,414	492	586	687	783	923

1) Stocks held by exporters, dealers and mills.

Authorities: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Basal.*

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	August 1933	July 1933	June 1933	August 1932	August 1931	August 1933	July 1933	June 1933	August 1932	August 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
<i>Great Britain:</i>										
American . . . .	2,178	2,066	1,935	1,682	2,033	455	432	405	352	425
Argentine, Brazilian, etc. . . . .	119	101	79	90	195	25	21	16	19	41
Peruvian, etc. . . .	176	149	146	208	229	37	31	31	43	48
East Indian, etc. . .	333	282	284	329	745	70	59	59	69	156
Egyptian, Sudanese . . . . .	1,208	1,255	1,258	1,547	1,304	253	263	263	324	273
Other 1) . . . . .	229	243	182	111	233	48	51	38	23	49
TOTAL . . . .	4,243	4,096	3,884	3,967	4,739	888	857	812	830	992
<i>Bremen:</i>										
American . . . .	2,270	2,402	2,407	1,968	1,628	475	502	503	307	341
Other . . . . .	84	71	75	29	67	18	15	16	6	14
TOTAL . . . .	2,354	2,473	2,482	1,997	1,695	493	517	519	313	355
<i>Le Havre:</i>										
American . . . .	917	890	963	677	1,225	192	186	201	142	256
Other . . . . .	50	38	38	62	167	10	8	7	13	35
TOTAL . . . .	967	928	1,001	739	1,392	202	194	208	155	291
<i>Total Continent 2):</i>										
American . . . .	3,928	4,114	4,254	2,828	3,303	822	860	890	592	691
Argentine, Brazilian, etc. . . . .	33	32	21	30	105	7	7	4	6	22
E. Indian, Australian, etc. . . . .	186	141	166	70	206	39	29	35	15	43
Egyptian . . . .	109	109	118	127	77	23	23	25	26	16
W. Indian, W. African, E. African, etc. . . . .	31	32	31	32	44	6	7	6	7	9
TOTAL . . . .	4,287	4,428	4,590	3,087	3,735	897	926	960	646	781

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports.  
Authority: *Liverpool Cotton Ass.*



## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	18	11	4	28	21	AVERAGE 1)				Commercial Season	
	August	August	August	July	July	July	August	August		1932-33	1931-32
	1933	1933	1933	1933	1933	1933	1932	1931			
<b>WHEAT.</b>											
Budapest: Tisza region (78 kg. p. hl.; pengő p. quintal) . . . . .	8.70	9.07	9.95 <sup>a)</sup>	10.55 <sup>a)</sup>	10.97	<sup>a)</sup> 11.63 <sup>a)</sup>	14.06	10.21		13.73	12.22
Braia: Good quality (lei p. quintal) . . . . .	<sup>b)</sup> 370	<sup>b)</sup> 340	<sup>b)</sup> 350	n. q.	n. q.	n. q.	<sup>b)</sup> n. 420	282	n. 535	305	
Winnipeg: No. 1 Manitoba (cents p. 60 lbs.) . . . . .	68 <sup>1</sup> / <sub>2</sub>	76 <sup>1</sup> / <sub>2</sub>	79 <sup>1</sup> / <sub>2</sub>	81 <sup>1</sup> / <sub>2</sub>	78 <sup>1</sup> / <sub>2</sub>	82 <sup>1</sup> / <sub>2</sub>	55 <sup>1</sup> / <sub>2</sub>	55 <sup>1</sup> / <sub>2</sub>	54 <sup>1</sup> / <sub>2</sub>	59 <sup>1</sup> / <sub>2</sub>	59 <sup>1</sup> / <sub>2</sub>
Chicago: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	n. 87 <sup>1</sup> / <sub>2</sub>	96 <sup>1</sup> / <sub>2</sub>	96 <sup>1</sup> / <sub>2</sub>	<sup>a)</sup> 101 <sup>1</sup> / <sub>2</sub>	<sup>a)</sup> 89 <sup>1</sup> / <sub>2</sub>	<sup>a)</sup> 98 <sup>1</sup> / <sub>2</sub>	53 <sup>1</sup> / <sub>2</sub>	50 <sup>1</sup> / <sub>2</sub>	59 <sup>1</sup> / <sub>2</sub>	54 <sup>1</sup> / <sub>2</sub>	54 <sup>1</sup> / <sub>2</sub>
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	84 <sup>1</sup> / <sub>2</sub>	94 <sup>1</sup> / <sub>2</sub>	98 <sup>1</sup> / <sub>2</sub>	103 <sup>1</sup> / <sub>2</sub>	93	103	56	63 <sup>1</sup> / <sub>2</sub>	60 <sup>1</sup> / <sub>2</sub>	66 <sup>1</sup> / <sub>2</sub>	66 <sup>1</sup> / <sub>2</sub>
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	94 <sup>1</sup> / <sub>2</sub>	105 <sup>1</sup> / <sub>2</sub>	107 <sup>1</sup> / <sub>2</sub>	113	<sup>a)</sup> 101 <sup>1</sup> / <sub>2</sub>	110 <sup>1</sup> / <sub>2</sub>	61 <sup>1</sup> / <sub>2</sub>	61 <sup>1</sup> / <sub>2</sub>	68 <sup>1</sup> / <sub>2</sub>	66 <sup>1</sup> / <sub>2</sub>	66 <sup>1</sup> / <sub>2</sub>
Buenos Aires (b); Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	6.30	6.60	6.65	6.75	6.75	6.66	7.05	5.75	6.09	6.68	
Karachi: Karachi white, 2 % barley, 1 1/2 % dirt (rupees p. 656 lbs.) . . . . .	24-1-0	24-12-0	25-4-0	26-13-0	27-3-0	27-0-0	28-0-6	17-8-6	28-4-2	21-15-9	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	<sup>a)</sup> 17.40 <sup>a)</sup>	17.40 <sup>a)</sup>	17.50	<sup>a)</sup> 18.47	18.95	18.73 <sup>a)</sup>	21.10	21.07	19.60	23.63	
Hamburg, c. i. f. (Reichsmarks p. quintal):											
No. 2 Manitoba . . . . .	8.95	9.89	10.20	10.50	9.59	10.04	9.56	10.60	8.83	10.38	
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	9.79	8.58	n. q.	9.32	
Barusso 2) . . . . .	7.72	8.11	8.28	8.59	8.53	8.55	8.92	8.25	7.76	8.78	
Antwerp (francs p. quintal):											
Home grown . . . . .	78.00	82.00	85.00	85.00	85.00	85.00	n. q.	97.00	79.70	83.10	
No. 1 Hard Winter, Gulf . . . . .	83.00	84.50	86.00	87.00	87.00	85.50	81.25	73.00	77.70	81.75	
Paris: Home-grown, 75-77 kg. (francs p. quintal). . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. 98.25 <sup>a)</sup>	124.35	162.45	107.35	167.10	
London: Home grown (shillings p. 504 lbs.) . . . . .	n. q.	n. q.	n. q.	30/6	30/6	29/9	<sup>a)</sup> 26/1	27/-	24/8 <sup>1</sup> / <sub>2</sub>	26/5	
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.):											
South Russian (on sample) . . . . .	23/3	26/6	27/-	n. 29/-	n. q.	n. q.	26/5	17/7	n. 26/3	22/3	
No. 3 Manitoba . . . . .	25/7 <sup>1</sup> / <sub>2</sub>	28/6	30/1 <sup>1</sup> / <sub>2</sub>	n. 31/6	29/-	29/10	26/3 <sup>1</sup> / <sub>2</sub>	19/8	25/3	25/9	
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	27/5	19/-	n. q.	25/3	
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	19/2	n. q.	26/5	
Rosafé (afloat) 3) . . . . .	22/-	23/9	24/9	26/-	25/3	25/2 <sup>1</sup> / <sub>2</sub>	26/6	17/11	23/2	23/8	
Australian . . . . .	25/6	27/6	28/3	28/4 <sup>1</sup> / <sub>2</sub>	28/3	28/-	27/7	19/6	25/7	25/9	
Milan (a): Home-grown, soft, "Buono mercantile" (76-78 kg. p. hl.; lire p. quintal) . . . . .	<sup>a)</sup> 84.00 <sup>a)</sup>	<sup>a)</sup> 84.00 <sup>a)</sup>	<sup>a)</sup> 84.00 <sup>a)</sup>	<sup>a)</sup> 84.00 <sup>a)</sup>	84.00	85.10 <sup>a)</sup>	98.75	88.60	101.80	106.20	
Genoa c. i. f.: Plate (dollars p. quintal) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 2.21	n. 2.20	n. 1.85	n. 2.21	
<b>RYE.</b>											
Budapest: Home-grown (pengő p. quintal) . . . . .	5.05	n. q.	6.25 <sup>a)</sup>	6.30 <sup>a)</sup>	6.92	<sup>a)</sup> 6.61	7.71	8.94	6.77	12.24	
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	14.10	14.10	14.20	14.40	15.40	15.12 <sup>a)</sup>	15.95	16.34	15.52	19.00	
Hamburg, c. i. f. (Reichsmarks p. quintal):											
Russia (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 6.40	n. 9.50	
La Plata (74-75 kg. p. hl.) 4) . . . . .	5.73	5.86	6.16	6.35	6.70	6.49	n. q.	n. q.	6.71	5.98	
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	63	69 <sup>1</sup> / <sub>2</sub>	73	79 <sup>1</sup> / <sub>2</sub>	70	81 <sup>1</sup> / <sub>2</sub>	33 <sup>1</sup> / <sub>2</sub>	39 <sup>1</sup> / <sub>2</sub>	41 <sup>1</sup> / <sub>2</sub>	42 <sup>1</sup> / <sub>2</sub>	
Groningen (c): Home-grown (florins p. quintal) . . . . .	n. q.	n. q.	n. q.	n. q.	3.80	3.70	4.61	4.34	3.92	5.13	
<b>BARLEY.</b>											
Braia: Average quality (lei p. quintal) . . . . .	143	150	155	<sup>a)</sup> 162	<sup>a)</sup> 172	<sup>a)</sup> 173	206	214	187	263	
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	36 <sup>1</sup> / <sub>2</sub>	43 <sup>1</sup> / <sub>2</sub>	45 <sup>1</sup> / <sub>2</sub>	45 <sup>1</sup> / <sub>2</sub>	42	44 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	29 <sup>1</sup> / <sub>2</sub>	29 <sup>1</sup> / <sub>2</sub>	34 <sup>1</sup> / <sub>2</sub>	
Chicago: Feeding (cents p. 48 lbs.) . . . . .	42	38	42	52	<sup>a)</sup> 69	58 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	23 <sup>1</sup> / <sub>2</sub>	37 <sup>1</sup> / <sub>2</sub>	43 <sup>1</sup> / <sub>2</sub>	
Minneapolis: Feeding, "lower grades" (cents per 48 lbs.) . . . . .	41	43	46	51 <sup>1</sup> / <sub>2</sub>	<sup>a)</sup> 46	52 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	36	27 <sup>1</sup> / <sub>2</sub>	38 <sup>1</sup> / <sub>2</sub>	
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	16.25	16.19	15.47	16.55	16.41	
Antwerp: Danubian (francs p. quintal) . . . . .	47.50	50.00	53.00	53.00	54.00	53.25	66.75	70.50	55.50	77.25	
London: English malting (shillings p. 448 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	<sup>a)</sup> n. 35/-	<sup>a)</sup> n. 40/-	35/-	39/4	
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):											
Danubian 3 % . . . . .	13/6	14/-	14/6	<sup>a)</sup> 15/-	<sup>a)</sup> 16/-	<sup>a)</sup> 15/7 <sup>1</sup> / <sub>2</sub>	17/7	14/7	n. 16/7	n. q.	
Russian (Azoff-Black sea) . . . . .	13/6	14/-	15/-	<sup>a)</sup> 15/-	16/6	n. 15/9	17/9	14/2	n. 16/5	18/11	
Canadian Western, N. 3. . . . .	n. q.	20/9	21/6	n. q.	n. q.	n. 19/3	20/-	15/3	18/3	20/11	
Californian malting (shillings p. 448 lbs.) . . . . .	<sup>a)</sup> n. 26/-	<sup>a)</sup> n. 26/-	<sup>a)</sup> n. 26/-	<sup>a)</sup> n. 26/-	<sup>a)</sup> n. 26/6	n. 25/10 <sup>1</sup> / <sub>2</sub>	22/1	30/4	22/8	33/4	
Groningen (c): Home grown winter (fl. p. quintal). . . . .	n. q.	3.55	3.62	3.72	3.62	3.65	4.95	5.25	4.40	5.87	

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) August 1931 — Jan. 1932: 79 kg. p. hl.; Feb.-Dec. 1932: 80 kg.; afterwards: 79 kg. — 3) August — Nov. 1931: 63 lbs p. bushel; Dec. 1931: 63<sup>1</sup>/<sub>2</sub> lbs.; Jan.-Dec. 1932: 64 lbs; afterwards 63<sup>1</sup>/<sub>2</sub> lbs. — 4) From November 1932: 72-73 kg. p. hl. — 5) New crop. — 6) Price of the preceding day. — 7) Shipping August-Sept.

PRODUCTS, MARKETS AND DESCRIPTION						AVERAGE 1)				
	18	11	4	28	21	July	August	August	Commercial	
	August	August	August	July	July				Season	
	1933	1933	1933	1933	1933	1933	1932	1931	1932-33	1931-32
<b>OATS.</b>										
Braita: Good quality (lei p. quintal) . . . . .	142	145	152	n. q.	n. q.	n. q.	200	231	n. 195	285
Winnipeg: No. 2 White (cents per 34 lbs.) . . . .	36 7/8	40 2/8	39 1/8	39 7/8	34	39 1/8	30 1/4	28 1/4	26 1/2	31 3/8
Chicago: No. 2 White (cents per 32 lbs.) . . . .	37 1/4	39 1/4	39 1/4	40 1/4	33 1/4	40 1/4	18 1/4	23 1/4	21 7/8	24 1/8
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	3.90	4.10	4.20	4.30	4.50	4.35	5.59	4.14	4.43	5.33
Berlin: Home grown (Reichsmarks p. quintal) . .	12.80 <sup>a)</sup>	13.05	13.70	13.70	13.70	13.79	14.55	14.62	13.05	15.10
Paris: Home grown, black and other (francs p. quintal) . . . . .	52.60	53.75	58.00	54.00	60.00	60.45	83.60	83.45	76.30	101.75
London: Home grown white (shillings p. 336 lbs.)	17/-	17/-	17/-	17/-	17/-	17/6	21/9	20/-	18/6	21/3
London and Liverpool c. i. f., parcels (shillings p. 320 lbs.):										
Danubian (39-40 lbs.) . . . . .	11/3	n. q.	n. q.	n. q.	n. q.	n. q.	14/5	n. q.	n. 14.3	n. q.
Plate (f. a. q.) . . . . .	11/6	11/7 1/2	11/7 1/2	12/-	12/9	12/3 3/4	15/-	10/11	12/9	14/5
Chilian Tawny . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11/5	n. q.	n. 16/-
Milan (b), spot (lire p. quintal):										
Home grown . . . . .	47.00	47.00	47.00	47.00	52.50	51.40	65.60	66.50	62.80	73.60
Foreign imported . . . . .	48.00	48.00	48.00	48.00	51.00	49.80	64.10	64.00	57.10	65.20
<b>MAIZE.</b>										
Braita: Danubian (lei p. quintal) . . . . .	165	157	166	170	177	171	189	202	187	210
Chicago: No. 2 Mixed American (cents p. 56 lbs.)	51 1/2	54 1/2	52 1/2	54 1/2	49 1/2	56	32 3/4	44	34	58 1/4
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	3.87 1/2	4.00	4.00	4.10	4.15	4.09	4.92	3.66	4.63	3.82
Antwerp, spot (francs p. quintal):										
Bessarabian . . . . .	n. q.	n. q.	48.00	48.50	48.50	47.50	n. q.	68.75	n. q.	71.25
Argentine Cinqantino . . . . .	56.00	59.00	63.00	66.00	69.00	67.90	72.25	62.00	63.30	81.00
Yellow Plate . . . . .	42.00	42.00	47.00	47.50	47.50	47.60	58.60	55.00	57.20	65.00
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.):										
Danubian . . . . .	n. q.	n. q.	16/6	16/9	17/-	16/9	19/9	16/9	n. 19/3	n. 17/4
Yellow Plate . . . . .	15/3	15/7 1/2	16/3	16/7 1/2	17/1 1/2	16/9 3/4	19/1	13/4	18/2	15/6
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	20/6	17/10	n. 20/11	n. 18/1
Milan (b) Home grown (lire p. quintal) . . . .	48.00	47.00	49.00	50.00	51.00	50.00	n. 80.00	49.50	68.70	51.90
<b>RICE (CLEANED).</b>										
Milan (b), (lire p. quintal):										
Vialone (Camolino) . . . . .	225.00	225.00	232.50	232.50	237.50	239.50	189.50	126.25	181.15	145.90
Maratelli (Camolino) . . . . .	139.00	140.00	145.00	157.50	162.50	169.00	171.75	97.60	151.25	117.35
Originario (Raffinato) . . . . .	97.00	97.00	97.00	99.50	103.50	104.20	133.25	93.25	121.40	103.20
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . .	182	197	207	211	209	211 3/4	264 1/4	287	268 3/8	249 3/4
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white (25 % broken) . . . . .	...	...	...	5.02	5.30	5.21	5.38	8.46	5.48	6.73
No. 2 Japan (40 % broken) . . . . .	...	...	...	4.89	5.14	5.02	5.11	7.95	5.11	6.20
London (a): c. i. f. (shillings p. 112 lbs):										
Spanish Belloch, No. 3 oiled . . . . .	10/6	9/3	9/6	10/3	11/-	11/0 3/4	14/5	10/8	13/8	11/11
Italian good, No. 6 oiled . . . . .	n. q.	14/6	14/6	14/6	14/6	14/6	n. 15/6	n. q.	14/-	13/7
American Blue Rose . . . . .	n. q.	18/-	17/-	16/3	16/3	16/3 3/4	16/8	17/7	17/1 1/4	18/7
Burma, No. 2 . . . . .	6/9	6/10 1/2	6/10 1/2	6/10 1/2	7/0 3/4	6/11 1/4	7/11	8/8	8/4	7/11
Saigon, No. 1 . . . . .	7/4 1/2	7/4 1/2	7/7 1/2	7/10 1/2	8/-	7/10 1/2	8/3	8/10	8/5	8/1
Siam, Garden No. 1 2) . . . . .	8/4 1/2	8/4 1/2	8/7 1/2	8/7 1/2	8/9	8/9 1/2	8/9	9/8	9/4 1/2	9/5
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	20.90	21.30	21.00	20.70	20.60	20.60	20.32	20.43	21.20	18.46
<b>LINSRED.</b>										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	11.65	12.15	12.55	13.10	13.15	13.10	9.31	11.31	9.22	10.82
Antwerp: Plate (francs p. quintal) . . . . .	123.00	127.00	133.50	133.00	136.50	134.50	101.25	146.00	103.25	146.00
London, c. i. f. (£ p. long ton):										
La Plata (delivery Hull) . . . . .	n. 10-15-0	n. 11-0-0	11- 2-6	11-15-0	11-12-6	11-7-10	8-7-10	8- 2-6	8- 8-4	8-14-1
Bombay bold . . . . .	12- 0-0	12- 2-6	12- 2-6	12-12-6	12-15-0	12-11-3	10-19-8	10-16-3	11-10-0	11- 9-6
Duluth: No. 1 Northern (cents p. 56 lbs.) . . .	189	192 1/2	191	205	210	209 1/2	101 1/4	141	118 1/4	148

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From January 1932; Siam, Special. — 3) New Crop. — 4) Shipping Sept.-Oct. — 5) 13 July: 5.22; 7 July: 5.30. — 6) 13 July: 4.98; 7 July: 5.06. — 7) Price of the preceding day.

PRODUCTS, MARKETS AND DESCRIPTION	18	11	4	28	21	AVERAGE 1)					
	August	August	August	July	July	July	August	August	Commercial		
	1933	1933	1933	1933	1933	1933	1932	1931	Season		
COTTONSEED.											
Alexandria: Sakellaridis (piastres per ardeb) . .	47.7	50.1	51.0	54.1	55.5	55.2	67.1	42.3	60.0	52.2	
London: Sakellaridis (delivery Hull: £ p. 1. ton) .	5-3-9	5-8-9	5-11-3	5-15-0	5-18-9	5-18-9	6-19-1	4-15-7	6-3-7	5-12-6	
COTTON.											
New Orleans: Middling (cents per lb.) . . . . .	9.15	9.25	10.14	10.47	9.94	10.53	7.19	6.99	7.27	6.20	
New York: Middling (cents per lb.) . . . . .	9.25	9.30	10.15	10.50	10.10	10.62	7.34	7.18	7.38	6.35	
Bombay: M. g. Broach f. g. (rupees per 784 lbs.).	192 1/2	200	195	197 1/2	205	202 7/8	214 1/2	147 1/4	200 3/4	181 1/2	
Alexandria (talari per kantar):											
Sakellaridis f. g. f. . . . .	13.35	14.30	14.90	15.35	14.90	15.19	14.91	10.84	14.15	12.17	
Ashmuni-Zagora f. g. f. . . . .	12.07	12.72	13.47	13.87	13.57	13.66	12.51	7.86	12.46	9.73	
Iremen: Middling (U. S. cents per lb.) . . . . .	10.73	11.08	11.79	12.39	12.20	12.34	8.42	8.34	8.54	7.44	
M. g. Broach fully good (pence per lb.) . . . .	n. 4.75	n. 4.95	n. 5.15	n. 5.30	n. 5.15	n. 5.29	n. 5.04	n. 3.59	n. 4.81	n. 4.48	
Le Havre: Middling, Gulf (francs per 50 kg.) . .	234.00	238.00	254.00	261.00	253.00	257.25	247.00	235.00	233.75	216.00	
Liverpool (pence per lb.):											
Middling fair . . . . .	n. 6.86	n. 7.10	n. 7.45	n. 7.67	n. 7.43	n. 7.56	n. 6.60	n. 5.10	n. 6.76	n. 5.85	
Middling . . . . .	5.66	5.90	6.25	6.47	6.23	6.36	5.60	3.90	5.61	4.79	
São Paulo, good fair . . . . .	n. 5.96	n. 6.15	n. 6.50	n. 6.72	n. 6.48	n. 6.61	n. 5.89	n. 4.10	n. 5.87	4.98	
M. g. Broach, fully good . . . . .	n. 4.68	n. 4.87	n. 5.17	n. 5.48	n. 5.31	n. 5.39	n. 5.16	n. 3.19	n. 5.01	n. 4.34	
Sakellaridis, fully good fair . . . . .	7.63	7.96	8.32	8.48	8.33	8.42	7.92	5.99	7.77	6.76	
BUTTER.											
Copenhagen (a) Danish (Crs. p. quintal) . . . .	178.00	172.00	172.00	165.00	158.00	157.25	166.00	201.00	178.70	209.00	
Leeuwarden, Commission for the Dutch butter quotations: (florins per kg.) . . . . .	0.64	0.61	0.61	0.59	0.55	0.54	0.76	1.29	0.94	1.34	
Maastricht, auction (b): Dutch (florins p. kg.) 2)	1.67	1.64	1.64	1.62	1.57	1.58	1.32	1.33	1.27	1.38	
Hamburg, auction (c): Schleswig-Holstein butter, with quality mark (R. M. per 50 kg.) . . . .	122.38	120.70	118.63	116.69	114.76	114.61	105.86	132.50	115.83	131.22	
Kempten (c): Allgäu butter (Pfennige p. half kg.) 3)	116	116	115	113	110	110	97 1/4	110	107	110	
London (d) (shillings p. cwt.):											
British blended . . . . .	112/-	112/-	112/-	107/4	107/4	107/4	135/4	140/-	131/6	140/4	
Danish . . . . .	108/-	105/-	104/-	100/-	100/-	98/-	118/9 1/4	126/6	123/2	133/4	
Irish creamery, salted . . . . .	88/-	87/-	86/-	84/-	84/-	84/9	n. 116/-	119/6	n. 111/-	119/5	
Dutch . . . . .	109/-	102/-	102/-	102/-	100/-	100/-	115/-	122/-	n. 115/10	132/1	
Argentine . . . . .	90/-	88/-	88/-	86/-	82/-	83/-	102/7	116/-	103/9	117/7	
Siberian 4) . . . . .	78/-	78/-	77/-	76/-	74/-	75/4	n. q.	n. q.	n. 93/3	n. q.	
Australian, salted . . . . .	92/-	89/-	88/-	84/-	84/-	84/3	108/4 1/4	114/9	105/7	116/8	
New Zealand, salted . . . . .	94/-	91/-	88/-	84/-	84/-	84/9	114/2 1/4	119/3	109/10	119/11	
CHEESE.											
Milan (lire per quintal):											
Parmigiano-Reggiano, 1st quality of last year's production . . . . .	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00	1,100.00	1,225.00	1,016.00	1,103.00	
Green Gorgonzola, mature, choice . . . . .	425.00	425.00	425.00	455.00	455.00	455.00	471.00	592.00	512.70	616.00	
Rome: Roman pecorino, choice (lire p. quintal) .	1,025.00	1,025.00	1,025.00	1,037.00	1,050.00	1,053.00	1,175.00	1,084.00	1,251.00	1,121.00	
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . . . .	20.00	20.50	20.00	21.00	19.00	19.50	20.25	37.75	24.41	32.63	
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.) . . . . .	24.50	23.50	23.50	25.00	25.50	25.25	24.00	40.12	26.92	37.93	
Kempten (c): (Pfennige per half kg.):											
Soft cheese, green (20 % butterfat) . . . .	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/4	22 1/2	28 1/2	21	24	
Emmenthal from the Allgäu (whole milk cheese) 1st quality . . . . .	72	72	72	72	72	72	83	100 1/2	81 1/4	97 1/2	
London (d) (shillings per cwt.):											
English Cheddar . . . . .	98	104/-	104/-	104/-	100/-	101/-	95/2 1/4	96/9	109/-	99/10	
Canadian . . . . .	58/-	56/-	78/-	78/-	78/-	78/1 1/2	64/2 1/4	65/1	72/10	75/9	
New Zealand . . . . .	54/-	54/6	55/-	54/-	53/-	53/10 1/2	60/10 1/2	65/3	63/1	63/2	
Liverpool (d): Engl. Cheshire, ungraded (sh. p. cwt.)	60/6	60/6	60/6	60/6	60/6	58/3	78/1	75/10	103/10	94/3	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From January 1933: quotations in Zutphen; see note on page 425 of the "Crop Report" of June. — 3) The method of quotation was changed in January 1932; in June another change has occurred; see note on page 425 of the "Crop Report" of June. — 4) September 1932-January 1933: Russian. — 5) Russian. — 6. New.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary table are given below.

### *Percentage variations in the index-numbers for July, 1933.*

COUNTRIES	compared with those for June, 1933		compared with those for July, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 1.8	+ 1.1	— 6.4	— 2.1
England and Wales . . . . .	+ 1.0	+ 0.5	— 4.7	— 3.1
Argentina . . . . .	+ 7.1	—	+ 6.4	—
Canada . . . . .	+ 14.3	+ 4.3	+ 25.2	+ 5.1
United States . . . . .	+ 18.7	—	+ 33.3	—
Finland . . . . .	+ 13.0	+ 6.0	+ 25.5	+ 6.6
Hungary . . . . .	— 0.0	+ 1.1	+ 2.7	+ 1.1
Italy . . . . .	— 13.7	— 7.6	— 34.5	— 22.3
New Zealand . . . . .	— 2.6	— 0.6	— 20.6	— 5.5
Netherlands . . . . .	+ 5.3	—	+ 6.7	—
Poland . . . . .	+ 4.3	0.0	— 5.8	— 3.9
Yugoslavia . . . . .	— 0.6	0.0	— 1.6	— 3.8
	a) — 4.9	—	a) — 20.6	—
	d) — 6.6	— 3.6	d) — 6.6	— 2.9

a) Bureau of Agricultural Economics — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	July	June	May	April	March	Feb.	July	July	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
GERMANY (Statistisches Reichsamt) 1913 = 100.										
Foodstuffs of vegetable origin . . . . .	100.6	100.8	99.4	97.8	99.0	97.0	116.6	126.1	112.0	119.3
Livestock . . . . .	62.3	59.7	59.2	59.9	61.3	60.5	66.7	81.7	65.5	83.0
Livestock products . . . . .	96.2	93.1	93.2	85.3	84.6	88.0	89.4	105.6	93.9	108.4
Feeding stuffs . . . . .	87.3	86.6	84.2	83.4	83.8	81.8	94.2	104.7	91.6	101.9
Total agricultural products . . . . .	86.6	85.1	84.2	81.8	82.5	82.2	92.5	105.4	91.3	103.8
Fertilizers 2). . . . .	69.1	71.9	71.2	71.9	72.7	73.4	67.7	71.3	—	76.5
Agricultural dead stock . . . . .	111.9	111.4	110.9	111.1	111.2	111.5	115.5	129.9	116.1	130.7
Finished manufactures (s. Konsum- güter 3) . . . . .	112.2	110.8	109.9	109.2	109.5	110.5	116.0	140.6	117.5	140.1
Wholesale products in general . . . . .	93.9	92.9	91.9	90.7	91.1	91.2	95.9	111.7	96.5	110.9
ENGLAND AND WALES Ministry of Agriculture and Fisheries) Average of corresponding months 1911-13 = 100.										
Agricultural products . . . . .	101	100	102	105	102	106	106	121	109	120
Feeding stuffs . . . . .	85	85	85	86	90	91	94	81	95	83
Fertilizers . . . . .	91	91	91	90	90	90	89	100	90	96
Wholesale products in general 3) . . . . .	96.1	95.6	95.2	92.4	90.6	90.6	92.8	94.4	94.9	97.7
ARGENTINA (Banco de la Nación Argentina) 1926 = 100.										
Cereals and linseed . . . . .	61.2	55.8	54.2	51.7	51.7	52.6	60.4	55.1	59.5	55.8
Wheat . . . . .	66.2	64.1	65.0	63.7	64.0	57.7	71.5	92.9	69.8	94.3
Hides and skins . . . . .	75.7	74.8	72.3	53.2	49.9	49.1	47.7	63.1	53.1	64.5
Wool . . . . .	59.0	58.0	49.6	41.9	40.8	40.8	43.0	52.4	44.2	61.2
Dairy products . . . . .	66.9	55.4	48.4	49.4	51.8	52.3	57.3	84.0	56.9	74.5
Forest products . . . . .	75.7	75.7	71.8	71.8	71.8	71.8	63.3	107.1	68.4	99.3
Total agricultural products . . . . .	63.0	58.8	56.7	52.8	52.6	52.4	59.2	63.7	59.1	63.8
CANADA (Internal Trade Branch of the Dominion Bureau of Statistics) 1926 = 100.										
Field products (grain, etc.) . . . . .	60.8	49.4	46.9	41.1	38.0	36.0	41.8	43.5	40.7	43.6
Animals and animal products . . . . .	59.0	57.9	58.4	56.4	56.0	54.7	58.3	73.1	60.9	77.6
Total Canadian farm products . . . . .	60.1	52.6	51.2	46.8	44.7	43.0	48.0	54.6	48.3	56.3
Fertilizers . . . . .	73.0	73.0	73.0	71.7	72.9	72.9	72.0	86.5	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	75.3	75.0	75.5	74.8	76.0	76.1	78.5	79.5	78.8	80.0
Wholesale products in general . . . . .	70.5	67.6	66.9	65.4	64.4	63.6	66.6	71.3	67.0	72.1
ESTONIA (Central Bureau of Statistics) 1913 = 100.										
Commodities imported 4) . . . . .	...	...	...	...	...	...	115	136	113	129
Commodities exported . . . . .	...	51	56	54	58	58	53	76	58	76
Agricultural products imported and exported 4) . . . . .	...	...	...	...	...	...	70	94	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series. — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	July	June	May	April	March	Feb.	July	July	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
UNITED STATES										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	94	63	62	47	36	34	42	57	44	63
Fruits and vegetables . . . . .	103	74	68	66	60	57	83	110	71	98
Meat animals . . . . .	66	66	65	57	56	53	72	92	63	93
Dairy products . . . . .	71	65	63	59	59	62	63	85	70	94
Poultry and eggs . . . . .	67	55	62	56	54	57	65	83	80	96
Cotton and cottonseed . . . . .	84	69	65	49	48	44	41	71	46	63
Total agricultural products . . . . .	76	64	62	53	50	49	57	79	57	80
Commodities purchased by farmers 2) . . . . .	105	103	100	...	103	104	109	129	111	129
Agricultural wages 2) . . . . .	78	—	—	73	—	—	87	123	90	116
UNITED STATES										
(Bureau of Labor)										
1926 = 100.										
Grains . . . . .	73.4	57.4	52.8	44.8	36.0	32.7	36.7	49.0	39.4	53.0
Livestock and poultry . . . . .	47.4	46.6	46.8	41.0	43.0	40.1	54.1	63.0	48.3	63.9
Other farm products . . . . .	63.7	56.2	51.8	46.7	45.3	44.2	48.4	71.3	51.4	69.2
Total agricultural products . . . . .	60.1	53.2	50.2	44.5	42.8	40.9	47.9	64.9	48.2	64.8
Agricultural implements . . . . .	83.0	83.0	83.0	83.1	83.1	83.1	84.9	94.5	84.9	94.0
Fertilizer materials . . . . .	68.6	68.0	66.8	62.9	61.9	61.5	66.8	78.7	66.9	76.8
Mixed fertilizers . . . . .	63.3	63.0	63.1	60.0	60.1	62.4	68.8	80.2	69.4	82.0
Cattle feed . . . . .	82.4	55.8	54.4	49.5	47.3	40.6	42.2	55.8	45.9	62.4
Non-agricultural commodities . . . . .	70.7	67.4	65.4	63.7	63.8	63.7	68.0	71.5	68.4	73.1
Wholesale products in general . . . . .	68.9	65.0	62.7	60.4	60.2	59.8	64.5	70.0	64.9	71.1
FINLAND										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals . . . . .	93	92	91	90	90	91	88	79	90	77
Potatoes . . . . .	106	106	95	93	93	91	93	101	71	68
Fodder . . . . .	69	69	68	66	67	71	67	65	69	63
Meat . . . . .	64	68	69	68	66	66	65	65	61	64
Dairy products . . . . .	77	73	71	67	67	69	73	70	76	76
Total agricultural products . . . . .	75	75	73	71	72	74	73	71	74	72
Wholesale products in general . . . . .	90	89	88	88	89	89	89	82	90	84
HUNGARY										
(Central Bureau of Statistics)										
1913 = 100.										
Agricultural and livestock products . . . . .	57	66	66	68	71	72	87	87	—	—
Wholesale products in general . . . . .	73	79	79	80	82	83	94	95	—	—
ITALY										
(Consiglio Provinciale dell'Economia										
Corporativa di Milano)										
1913 = 100.										
National agricultural products . . . . .	261.20	268.08	272.28	275.55	289.77	305.65	378.78	337.05	339.63	343.11
Wholesale products in general . . . . .	283.26	284.98	282.24	282.18	287.23	292.64	299.93	337.43	309.91	341.57
NEW ZEALAND										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy produce . . . . .	85.7	82.9	77.3	76.4	77.6	83.3	89.4	94.7	93.8	98.6
Meat . . . . .	113.9	108.8	107.5	110.5	111.8	119.2	36.6	127.9	109.1	130.1
Wool . . . . .	65.8	62.6	56.7	64.7	63.0	64.3	55.5	66.9	61.3	67.2
Other pastoral produce . . . . .	81.8	66.7	55.1	55.6	57.6	58.9	59.0	77.0	62.2	76.1
All pastoral and dairy produce . . . . .	87.0	82.5	77.4	79.9	80.5	85.1	82.2	94.0	86.4	96.1
Field products . . . . .	116.0	114.8	113.9	114.9	115.0	107.0	84.8	116.5	101.7	111.1
Total agricultural products . . . . .	87.8	83.4	78.4	80.9	81.4	85.7	82.3	94.6	86.8	94.1

1) Most data for 1932 are provisional. — 2) 1910-14 = 100.

COUNTRIES AND CLASSIFICATIONS	July	June	May	April	March	Feb.	July	July	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	112	116	116	119	119	119	124	111	120	125
Potatoes . . . . .	160	91	84	80	82	81	144	257	101	130
Wheat . . . . .	76	81	79	80	86	90	90	83	91	96
Other meat . . . . .	107	115	119	115	113	107	117	160	109	218
Fish . . . . .	71	60	68	65	76	103	78	81	93	108
Dairy products . . . . .	121	119	119	119	119	118	123	125	124	156
Concentrated feeding stuffs . . . . .	95	94	98	99	100	101	105	103	104	121
Faize . . . . .	82	85	85	85	87	90	90	81	90	108
Fertilizers . . . . .	92	92	92	92	92	92	89	96	89	105
<b>NETHERLANDS</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	46	36	38	37	40	41	51	67	a) 42	a) 58
Animal products . . . . .	49	50	51	50	48	50	52	70	a) 51	a) 57
Total agricultural products . . . . .	49	47	48	47	46	47	52	69	a) 49	a) 57
Agricultural wages . . . . .	74	74	74	83	83	83	83	95	a) 81	a) 93
Wholesale products in general 3) . . . .	49.4	49.4	48.7	48.0	48.7	50.1	51.4	65.6	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	50.8	53.4	47.9	50.4	49.8	49.6	47.3	48.2	49.8	53.9
Worked-up plant products . . . . .	64.4	65.2	60.6	63.5	61.7	61.8	61.2	64.1	61.3	65.9
Total products of plant origin . . . . .	57.5	59.4	54.2	56.9	55.8	55.6	54.2	56.0	55.6	60.0
Animals . . . . .	40.8	41.8	42.9	44.6	43.5	40.1	45.6	67.0	43.1	55.8
Dairy products . . . . .	43.7	39.6	42.6	40.5	45.8	47.2	50.8	59.2	55.4	68.0
Total products of animal origin . . . . .	42.3	41.0	42.8	43.0	44.8	43.4	48.2	63.6	48.2	60.8
Total agricultural products . . . . .	50.4	50.7	49.0	50.5	50.7	50.0	51.2	58.8	52.0	59.7
Fertilizers . . . . .	99.8	99.8	94.5	112.9	112.9	112.9	112.9	118.5	105.5	120.2
Industrial products . . . . .	64.2	64.1	63.0	63.1	63.3	64.0	67.7	80.1	69.6	79.4
Wholesale products in general . . . . .	58.1	58.1	56.8	57.6	57.9	57.9	60.4	70.3	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	58.1	61.1	59.3	62.1	61.7	65.5	73.2	78.9	67.5	96.7
Animal products . . . . .	54.0	57.8	55.2	56.2	58.0	60.1	57.8	74.7	56.	97.7
Industrial products . . . . .	70.5	72.0	71.8	72.7	73.6	73.0	63.4	71.3	66.2	80.2
Wholesale products in general . . . . .	63.7	66.1	64.9	66.3	67.8	68.4	65.6	74.4	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

## RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	18	11	4	28	21	AVERAGE					Commercial Season	
	August	August	August	July	July	July	August	August			1932-33	1931-32
	1933	1933	1933	1933	1933	1933	1932	1931				
<b>SHIPMENTS OF WHEAT AND MAIZE.</b>												
Danube to Antwerp/Hamburg . . .	(shill. per long ton)	13/9	13/6	13/6	13/6	13/6	13/7	14/1 <sup>1</sup> / <sub>2</sub>			13/9	14/6
Black Sea to Antwerp/Hamburg . .		9/6	9/3	9/3	10/-	10/-	10/1 <sup>1</sup> / <sub>2</sub>	9/4 <sup>1</sup> / <sub>2</sub>	10/5		10/-	10/10
St. John to Liverpool 1) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.		n. q.	1/7
Port Churchill to United Kingdom .		2/9	2/9	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.		n. q.	—
Montreal to United Kingdom . . . .	(shill. per 480 lbs.)	1/4 <sup>1</sup> / <sub>2</sub>	1/4 <sup>1</sup> / <sub>2</sub>	1/4 <sup>1</sup> / <sub>2</sub>	1/3	1/3	1/3	1/8 <sup>1</sup> / <sub>2</sub>	1/7		1/8 <sup>1</sup> / <sub>2</sub>	0.08
Gulf to United Kingdom . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.		2/-	2/6
New York to Liverpool 1) . . . . .		1/3	1/3	1/3	1/3	1/3	1/3 <sup>1</sup> / <sub>2</sub>	1/6	1/6		1/6	1/8
Northern Range to U. K./Continent.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7 <sup>1</sup> / <sub>2</sub>	1/7 <sup>1</sup> / <sub>2</sub>		1/6 <sup>1</sup> / <sub>2</sub>	0.09
North Pacific to United Kingdom (sh. per long ton)		18/6	18/6	18/6	n. q.	n. q.	n. q.	n. q.	n. 21/-	n. 20/10	n. 22/2	
Vancouver to Yokohama 1) (gold \$ per sh. ton).		2.15	2.15	2.15	2.00	2.00	2.00	2.00	2.67	1.98	2.30	
La Plata Down River, Necochea, Bahia Blanca 2) to U. K./Cont.		14/6	14/3	14/-	14/-	13/9	13/10 <sup>1</sup> / <sub>2</sub>	13/1 <sup>1</sup> / <sub>2</sub>	14/-	14/-	16/-	
La Plata Up River 3) to U. K./Continent.	(shill. per long ton)	17/-	16/3	16/-	16/6	16/-	16/1 <sup>1</sup> / <sub>2</sub>	14/6	18/3	15/10	17/6	
Karachi to U. K./Continent 4) . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	18/8	18/8	n. 20/-	n. 20/-	
Western Australia to U. K./Continent . . . . .		23/6	23/6	23/9	23/6	23/-	23/-	23/9	n. 26/-	24/6 <sup>1</sup> / <sub>2</sub>	26/-	
<b>SHIPMENTS OF RICE.</b>												
Salgon to Europe . . . . .	(shill. per long ton)	24/-	23/9	23/9	23/6	23/6	23/3	23/7	n. q.	23/5	24/3	
Burma to U. K./Continent . . . . .	n. q.	n. 22/6	23/-	23/-	23/-	23/-	23/-	n. q.	n. q.	n. 23/3	23/9	

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in 8 per 100 lb.

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates					Percentage bonus (+) or loss (—)				
	18	11	4	28	21	18	11	4	28	21
	August 1933	August 1933	August 1933	July 1933	July 1933	August 1933	August 1933	August 1933	July 1933	July 1933
Germany: reichsmark . . . . .	123.250	123.150	123.250	123.250	123.375	— 0.2	— 0.2	— 0.2	— 0.2	— 0.1
Argentina: paper peso *) . . . . .	131.254	130.682	130.793	131.274	130.350	— 40.3	— 40.6	— 40.5	— 40.3	— 40.7
Belgium: belga . . . . .	72.150	72.100	72.100	72.100	72.050	+ 0.1	+ 0.1	+ 0.1	+ 0.1	0.0
Canada: dollar *) . . . . .	3.596	3.577	3.545	3.539	3.523	— 30.6	— 31.0	— 31.6	— 31.7	— 32.0
Denmark: crown . . . . .	76.250	76.500	76.750	76.750	76.500	— 45.1	— 44.9	— 44.7	— 44.7	— 44.9
Egypt: pound 2) . . . . .	17.100	17.100	17.150	17.200	17.175	— 32.2	— 32.2	— 32.0	— 31.8	— 31.9
United Kingdom: pound sterling . . .	3.810	3.800	3.790	3.825	3.700	— 26.5	— 26.7	— 26.9	— 26.2	— 28.6
United States: dollar . . . . .	20.290	20.245	20.260	20.230	20.255	0.0	— 0.3	— 0.2	— 0.4	— 0.2
France: franc . . . . .	88.831	88.831	89.091	88.205	89.221	— 2.0	— 2.0	— 1.7	— 2.7	— 1.6
Indo-China: piastre 3) . . . . .	128.696	128.696	129.184	129.561	129.373	— 32.0	— 32.0	— 31.7	— 31.5	— 31.6
Hungary: pengő 4) . . . . .	27.250	27.150	27.150	27.300	27.300	— 0.1	— 0.5	— 0.5	+ 0.1	+ 0.1
India: rupee 5) . . . . .	101.727	103.284	103.494	105.857	106.819	— 60.6	— 60.0	— 59.9	— 59.0	— 58.7
Italy: lira . . . . .	208.900	208.625	208.625	208.250	209.000	+ 0.3	+ 0.1	+ 0.1	0.0	+ 0.3
Japan: yen 6) . . . . .	57.875	57.875	57.875	57.875	58.125	— 0.5	— 0.5	— 0.5	— 0.5	0.0
Netherlands: florin . . . . .	3.000	3.000	3.000	3.000	3.000	— 3.2	— 3.2	— 3.2	— 3.2	— 3.2
Poland: zloty . . . . .	88.250	88.500	88.500	88.500	88.500	— 36.5	— 36.3	— 36.3	— 36.3	— 36.3
Rumania: leu . . . . .	15.325	15.325	15.325	15.325	15.325	— 0.2	— 0.2	— 0.2	— 0.2	— 0.2
Sweden: crown . . . . .										
Czechoslovakia: crown . . . . .										

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling, 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) or a cross (†) conversion has been made, the original exchange rates on New York and on London respectively being converted into Swiss francs means of the U. S. dollar or sterling rates respectively in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changes only slightly the exchange rate of the latter only is given.

Prof. ALESSANDRO BRIZI, Segretario generale dell'Istituto, Direttore responsabile



# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## CEREALS

In Europe, the weather has generally favoured the wheat harvest, and previous judgements and forecasts regarding the good and often excellent quality of the product are, in general, confirmed. The data and news now possessed show a further increase in the total quantity produced compared with that forecast last month. In fact, whereas Spain has reduced its previous forecast by about 9.2 million bushels and the Netherlands has reduced its figure by so little as to practically confirm it, all of the other countries, which have already communicated their estimates have, in recent estimates, raised them. France has, moreover, communicated its estimate of over 338 million bushels, exceeding therefore the figure of the abundant crop of last year and Italy confirms the excellent results of its own crop. The Danubian countries, Hungary and Rumania have increased their estimates.

The total production of Europe (excluding the U. S. S. R.) this year, on the basis of the figures available and other information relative to countries which have not yet communicated their estimates, may be calculated in round figures at 1,650 million bushels and therefore about 165 millions above that of last year and 265 millions above the average of the preceding quinquennium. The present abundant production is, to a small extent, due to an increase in area but principally to an increase in yield per acre which, in its turn was brought about by the mostly favourable weather conditions and the perfection of cultivation.

The increased European production to be added to the considerable stocks of the old production in existence in some countries of the continent and the consideration that probably over 66 million bushels may be furnished by the Danubian countries to the European importing countries should reduce to about 257 million bushels, the quantity which these countries should obtain from the large overseas exporting countries and the U. S. S. R., against 430 millions actually imported last year, 529 millions in 1931-32 and 566 in 1930-31.

On the other hand, the increase in European production is more than balanced by the decrease in that of North America, due to the decrease in

the area and to damage caused by the adverse weather conditions. In fact the increase in Europe of 165 millions bushels compared with last year is offset by a decrease in North America of 364 millions and that of 265 millions compared with the five-year average is offset by a decrease in North America of 503 millions.

It should be borne in mind that the poor North-American production should bring about a diminution in the abundant stocks in existence in the two countries, although the extent of the reduction should be influenced by the quantity which the U. S. S. R. may be able to place on the world market, by that to be produced in the two large exporting countries of the southern hemisphere and by those which may be absorbed by the countries of the Far East.

For the U. S. S. R., in the absence of crop estimates, there are various factors indicating that, in general, and particularly in the Ukraine, production may be considered good and that sales are being effected on the world market. How far the latter may be developed, cannot yet be foreseen, especially in view of home requirements of foodstuffs.

Argentina, after a period of prolonged drought, has had general rains, which have greatly improved the general crop situation. Australia has also had weather conditions which have, on the whole, improved the forecasts of the new crop.

On the basis of considerations of a general order, it may be said that the Indian production may permit exports if the level of prices on the world market renders it possible.

In order to strengthen the world wheat market and with the specific object of adjusting the supply of wheat to effective world demand and eliminating the abnormal surpluses which have depressed the world market, also of bringing about a rise and stabilisation of prices at a level remunerative to farmers and fair to consumers, an agreement has been concluded between exporting and importing countries. This agreement was established at the Conference of wheat exporting and importing countries, participated in by the Governments of Germany, Austria, Belgium, Bulgaria, Czechoslovakia, France, Great Britain and Northern Ireland, Greece, Hungary, the Irish Free State, Italy, Poland, Rumania, Spain, Sweden, Switzerland, the U. S. S. R. and Yugoslavia, on the invitation extended to them by the Secretary General of the Monetary and Economic Conference (London 1933) on behalf of the Governments of Argentina, Australia, Canada and the United States.

The principal elements of the agreements reached are given below :

*Argentina, Australia, Canada and the United States*, for the year 1 August 1933- 31 July 1934 agree to adjust their export by means of quotas, taking into consideration the exports of other countries on the assumption that world import demand for wheat will amount during this period to 560 million bushels. For the year 1 August 1934-31 July 1935, these four countries will limit their exports to maximum quota, which will be for each country, 15 % below the average outturn on the average area sown during the period 1931-1933 inclusive after deducting normal domestic requirements. The difference between the effective world demand for wheat in the crop year 1934-35 and the quantity of new wheat

from the 1934 crop available for export will be shared between Canada and the United States of America as a supplementary export allocation with a view to the proportionate reduction of their respective carry-overs.

*Bulgaria, Hungary, Rumania and Yugoslavia*, agree that their combined exports of wheat during the crop year August 1, 1933 to July 31, 1934, will not exceed 50,000,000 bushels. This undertaking is made on the understanding that the aggregate may be increased to a maximum of 54,000,000 bushels if the Danubian countries find that such a supplementary quota is required for the movement of the exportable surplus of the 1933 crop. They further agree that their combined exports of wheat during the crop year 1934-35 will not exceed a total of 50,000,000 bushels and recognise that the acceptance of this export allocation will not allow of an extension of the acreage sown to wheat.

*The U. S. S. R.*, while unable to give any undertaking in regard to production of wheat, agree to limit their exports for the crop year 1933-34 to a figure which will be arrived at upon the completion of negotiations with the Governments of the overseas wheat exporting countries. Exports in 1934-35 are also to be the subject of further negotiations.

*The importing countries*: agree henceforth not to encourage any extension of the area sown to wheat and not to take any Governmental measures the effect of which would be to increase the domestic production of wheat. They also agree to adopt every possible measure to increase the consumption of wheat and are prepared to bring about the progressive removal of measures which tend to lower the quality of breadstuffs and thereby decrease the human consumption of wheat. Further they agree that a substantial improvement in the price of wheat should have as its consequence a lowering of Customs tariffs, and are prepared to begin such adjustment of Customs tariffs when the international price of wheat reaches and maintains for a special period an average price to be fixed. It is understood that the rate of duty necessary to assure remunerative prices may vary for different countries, but will not be sufficiently high to encourage their farmers to expand wheat acreage.

The importing countries agree that in order to restore more normal conditions in world trade in wheat the reduction of Customs tariffs would have to be accompanied by modification of the general regime of quantitative restriction of wheat imports and accept in principle the desirability of such a modification. The exporting countries for their part agree that it may not be possible to make substantial progress in these modifications in 1933-34, but the importing countries are prepared to make effective alterations in 1934-35 if world prices have taken a definitely upward turn from the average price of the first six months of the calendar year 1933. The objective of these relaxations of the various forms of quantitative restrictions will be to restore a more normal balance between total consumption and imports, and thereby to increase the volume of international trade in wheat.

The agreement also contains a declaration interpreting the obligations of importing countries and explaining also some reservations dependent on domestic conditions. The declaration also explains that the intention of the agreement is that the importing countries will not take advantage of a voluntary

reduction of exports on the part of the exporting countries by developing their domestic policies in such a way as to frustrate the efforts which the exporting countries are making, in the common interest, to restore the price of wheat to a remunerative level.

It is evident that this friendly agreement arrived at between so many countries, should have a beneficial effect on the world wheat situation.

\* \* \*

*Germany* : Owing to the dry, warm weather in the first half of August, grain crops were in general gathered without any large damage. The result of the grain harvest is judged to be satisfactory ; yields have been reduced by bad weather only in East Prussia.

According to the most recent estimate, production of spelt (including that mixed with wheat and rye this year, will be about 3,642,000 centals against 3,414,000 in 1932 and 3,217,000 on the average of the five years ending 1931. Percentages : 106.7 and 113.2. The area cultivated to buckwheat this year is estimated at 27,700 acres, against 29,100 in 1931 and 39,800 on the average. Percentages : 95.2 and 69.7. The corresponding data for meslin are 920,000 acres, against 905,000 and 904,000 acres. Percentages : 101.6 and 101.8.

*Austria* : During August, the weather was rather rainy and temperatures low. Towards the end of August, threshing was in progress and in places, almost finished. Threshing results were very satisfactory for all cereals. Quality of the grain is excellent, yield of straw is also good.

*Belgium* : Cereals have been harvested under excellent conditions.

*Bulgaria* : Weather conditions in August greatly favoured harvesting, which was finished towards the end of the month. Threshing of cereals is proceeding under favourable conditions and is about finished.

*Denmark* : Crop condition of wheat on September 1 was 97 against 95 on August 1, 1933 and 98 on September 1, 1932. The corresponding figures for rye are : 97, 97, 98 ; for barley : 89, 87, 98, for oats 94, 93, 96.

*Estonia* : Towards mid-August, the drought, which caused considerable damage to the spring crops, was interrupted by good rains, reviving growth and considerably improving the situation throughout the country, except for spring crops, which were irreparably damaged.

The increase in winter cereal production is to be attributed partly to the extension of area sown and partly to higher yields per acre. The decrease in production of spring crops is due partly to excessive drought and partly to a reduction of the area sown.

Production of mixed grain in 1933 was 1,411,000 centals against 1,591,000 in 1932 and 1,612,000 on the average for the preceding quinquennium. Percentages : 88.7 and 87.5.

*Irish Free State* : The cereal crops ripened very early were all harvested during August under ideal conditions. The yields were not expected to be as heavy as usual owing to the hot weather and early ripening.

Cereals.

COUNTRIES	†) AREA					†) PRODUCTION							
	1933	1932	Average	% 1933		1933	1932	Average	1933	1932	Average	% 1933	
	1933/34	1932/33	1927 to 1931	1933/34		1933/34	1932/33	1927 to 1931	1933/34	1932/33	1927 to 1931	1933/34	
			1927/28 to 1931/32	1932/1933	Aver.			1927/28 to 1931/32			1927/28 to 1931/32	1932/1933	Aver.
	1,000 acres					1,000 centals			1,000 bushels				
				= 100	= 100							= 100	= 100
WHEAT.													
Germany . . . .	5,728	5,635	4,460	101.7	128.4	121,748	110,299	81,594	202,910	183,828	135,987	110.4	149.2
Austria . . . .	535	536	512	99.7	104.5	9,654	7,405	7,134	16,090	12,342	11,890	130.4	135.3
Belgium . . . .	366	386	390	94.9	94.0	8,171	9,226	8,853	13,617	15,376	14,754	88.6	92.3
Bulgaria . . . .	3,002	3,078	2,841	97.6	105.7	31,277	30,332	29,474	52,127	50,553	49,123	103.1	106.1
Spain . . . . .	11,047	11,249	10,880	98.2	101.5	79,164	110,526	84,342	131,937	184,206	140,566	71.6	93.9
Estonia . . . .	163	128	82	127.5	199.4	1,257	1,251	810	2,094	2,085	1,350	100.5	155.2
*Irish Free State	52	21	28	243.1	183.1	...	498	680	...	831	1,133	...	...
Finland . . . .	65	59	41	111.7	160.1	941	890	578	1,569	1,483	963	105.8	163.0
France . . . . .	13,359	13,429	13,096	99.5	102.0	203,202	200,117	166,429	338,663	333,522	277,376	101.5	122.1
Engl. and Wales .	1,660	1,288	1,381	128.9	120.2	34,944	24,752	26,844	58,240	41,253	44,740	141.2	130.2
*Scotland . . .	78	52	56	149.8	139.5	...	1,344	1,299	...	2,240	2,165	...	...
Greece . . . . .	1,732	1,480	1,338	117.1	129.4	17,148	12,158	7,011	28,580	20,263	11,685	141.0	244.6
Hungary . . . .	3,936	3,793	4,014	103.8	98.0	54,038	38,678	48,963	90,061	64,462	81,603	139.7	110.4
*Italy 1) . . . .	12,517	12,237	12,031	102.3	104.0	...	166,300	136,684	...	277,161	227,802	...	...
Latvia . . . . .	309	255	170	121.1	182.1	3,545	3,175	1,791	5,907	5,292	2,984	111.6	198.0
Lithuania . . .	499	509	436	97.9	114.3	5,236	5,654	4,871	8,727	9,423	8,118	92.6	107.5
Luxemburg . . .	33	31	28	103.2	117.1	501	432	305	835	719	508	116.0	164.4
Malta . . . . .	10	10	9	101.0	104.4	183	181	175	305	301	291	101.2	104.6
*Norway . . . .	31	28	28	110.1	108.2	...	450	416	...	749	693	...	...
Netherlands . .	332	297	150	111.7	221.7	8,437	8,217	3,812	14,062	13,694	6,353	102.7	221.3
Poland . . . . .	4,082	4,265	3,727	95.7	109.5	41,006	29,684	42,206	68,342	49,472	70,343	138.1	97.2
Portugal . . . .	...	1,463	1,123	...	...	8,895	10,883	6,795	14,825	18,138	11,325	81.7	130.9
Rumania . . . .	7,772	7,091	7,694	109.6	101.0	68,344	33,322	69,373	113,904	55,536	115,620	205.1	98.5
Sweden . . . . .	797	746	605	106.9	131.8	16,689	15,900	10,862	27,815	26,500	18,102	105.0	153.7
Switzerland 2) .	185	181	176	102.1	105.1	3,832	3,241	3,335	6,386	5,402	5,559	118.2	114.9
Czechoslovakia .	2,273	2,092	1,957	108.7	116.2	39,461	32,242	29,377	65,767	53,736	48,961	122.4	134.3
Yugoslavia . . .	...	5,251	5,089	...	...	54,013	32,067	52,078	90,021	53,444	86,795	168.4	103.7
Total Europe . .	§) 64,599	63,252	60,199	102.1	107.3	811,686	720,632	687,012	1,352,784	1,201,030	1,144,996	112.6	118.1
*U. S. S. R. . . w)	28,058	32,337	22,107	86.8	126.9	—	—	—	—	—	—	—	—
Canada . . . . .	25,987	27,182	24,587	95.6	105.7	169,663	257,108	251,149	282,771	428,514	418,582	66.0	67.6
United States 1) s)	26,802	33,635	39,312	79.7	68.2	204,213	277,007	372,321	340,355	461,679	620,536	73.7	54.8
Mexico . . . . .	18,077	21,517	20,307	84.0	89.0	99,721	158,762	152,196	166,202	264,604	253,661	62.8	65.5
Total North Amer.	1,179	1,104	1,321	106.8	89.3	7,052	5,795	7,431	11,753	9,658	12,385	121.7	94.9
Korea . . . . .	...	...	866	...	...	4,983	4,983	5,194	8,304	8,305	8,657	100.0	95.9
India . . . . .	32,992	33,803	32,062	97.6	102.9	211,725	202,138	201,824	352,875	336,896	336,373	104.7	104.9
Japan . . . . .	1,500	1,247	1,201	120.3	124.9	23,597	18,802	18,114	39,328	31,336	30,189	125.5	130.3
*Syria and Leban .	954	1,191	1,182	80.1	80.7	...	6,229	8,631	...	10,382	14,385	...	...
Turkey . . . . .	...	8,555	6,663	...	...	48,502	41,607	48,524	80,835	69,344	80,872	116.6	100.0
Total Asia . . .	§) 43,913	44,471	40,792	98.7	107.6	288,807	267,530	273,656	481,342	445,881	456,091	108.0	105.5
Algeria . . . . .	3,815	3,736	3,718	102.1	102.6	16,281	17,542	18,007	27,135	29,236	30,012	92.8	90.
Egypt . . . . .	1,426	1,762	1,606	80.9	88.8	23,971	31,552	25,524	39,951	52,586	42,539	70.6	93.9
Eritrea s) . . . .	9	15	21	58.3	41.5	54	88	20	90	147	33	61.2	269.2
French Morocco .	3,026	2,713	2,695	111.5	112.3	15,172	16,782	15,738	25,286	27,970	26,229	90.4	96.4
Tunis . . . . .	1,977	2,392	1,802	82.6	109.7	5,512	10,472	7,015	9,186	17,453	11,692	52.6	78.6
Total Africa . .	10,253	10,618	9,842	96.6	104.2	60,990	76,436	66,304	101,648	127,392	110,505	79.8	92.0
*Argentina . . . .	4) 18,286	4) 19,791	4) 20,505	92.4	89.2	...	141,228	149,511	...	235,376	249,180	...	...
*Australia . . . .	14,500	15,171	15,000	95.6	96.7	...	126,000	97,078	...	210,000	161,794	...	...
GRAND TOTALS .	§) 190,810	201,779	196,360	94.6	97.2	1,642,132	1,763,270	1,810,069	2,736,855	2,938,758	3,016,756	93.1	90.7
RYE.													
Germany . . . .	11,179	10,996	11,434	101.7	97.8	192,892	184,385	166,978	344,451	329,261	298,177	104.6	115.5
Austria . . . . .	957	944	934	101.3	102.4	17,055	13,651	11,168	30,455	24,377	19,942	124.9	152.7
Belgium . . . . .	553	562	567	98.4	97.5	12,331	13,251	11,904	22,019	23,662	21,257	93.1	103.6
Bulgaria . . . .	526	544	549	96.8	95.9	5,494	5,676	5,110	9,811	10,136	9,126	96.8	107.5
Spain . . . . .	1,458	1,516	1,588	96.2	91.8	11,192	14,507	12,151	19,986	25,905	21,699	77.2	92.1

RYE.

Germany . . . .	11,179	10,996	11,434	101.7	97.8	192,892	184,385	166,978	344,451	329,261	298,177	104.6	115.5
Austria . . . . .	957	944	934	101.3	102.4	17,055	13,651	11,168	30,455	24,377	19,942	124.9	152.7
Belgium . . . . .	553	562	567	98.4	97.5	12,331	13,251	11,904	22,019	23,662	21,257	93.1	103.6
Bulgaria . . . .	526	544	549	96.8	95.9	5,494	5,676	5,110	9,811	10,136	9,126	96.8	107.5
Spain . . . . .	1,458	1,516	1,588	96.2	91.8	11,192	14,507	12,151	19,986	25,905	21,699	77.2	92.1

COUNTRIES	†) AREA					†) PRODUCTION									
	1933	1932	Average	% 1933		1933	1932	Average	1933	1932	Average	% 1933			
	—	—	to 1931	—	1933/34	—	—	to 1931	—	—	to 1931	—	—	—	—
	1933/34	1932/33	1927/28 to 1931/32	1932/1933	Aver.	1933/34	1932/33	1927/28 to 1931/32	1933/34	1932/33	1927/28 to 1931/32	1932/1933	Aver.	1932/1933	1933/34
	x,000 acres					x,000 centals					x,000 bushels				
Estonia . . . .	376	364	351	103.3	107.0	4,255	3,983	3,664	7,598	7,113	6,543	106.8	116.1		
Finland . . . .	563	538	533	104.6	105.8	7,855	7,261	6,719	14,027	12,966	11,998	108.2	116.9		
Greece . . . .	1,714	1,732	1,853	98.9	92.5	20,562	18,971	18,190	36,718	33,876	32,482	108.4	113.0		
Greece . . . .	191	163	142	117.0	134.1	1,823	1,472	920	3,255	2,629	1,643	123.8	198.0		
Hungary . . . .	1,674	1,553	1,582	107.8	105.8	21,054	16,969	15,283	37,597	30,301	27,291	124.1	137.8		
Italy 1) . . . .	286	294	306	97.4	93.4	3,626	3,584	3,587	6,475	6,400	6,400	101.2	101.1		
Latvia . . . .	652	593	618	110.0	105.6	7,889	6,604	5,392	14,087	11,793	9,629	119.5	146.3		
Lithuania . . . .	1,210	1,194	1,194	101.3	101.3	14,054	11,653	11,584	25,096	20,808	20,686	120.6	121.3		
Luxemburg . . . .	20	20	18	102.6	114.7	271	278	217	484	496	388	97.7	124.9		
Netherlands . . . .	406	410	476	99.2	85.4	7,665	7,650	8,756	13,688	13,661	15,636	100.2	87.5		
Poland . . . .	14,374	13,951	14,120	103.0	101.8	140,876	134,713	139,631	251,565	240,560	249,342	104.6	100.9		
Portugal . . . .	...	366	411	...	...	2,024	3,590	2,610	3,615	6,411	4,660	56.4	77.6		
Rumania . . . .	944	861	834	109.7	113.1	8,819	5,888	7,428	15,747	10,513	13,264	149.8	118.7		
Sweden . . . .	546	516	621	105.8	87.9	10,229	9,573	8,587	18,267	17,094	15,333	108.9	119.1		
Switzerland . . . .	46	46	48	100.8	95.4	827	829	866	1,476	1,481	1,547	99.7	95.4		
Czechoslovakia . . . .	2,595	2,585	2,545	100.4	101.9	43,398	47,970	36,896	77,497	85,661	65,885	90.5	117.6		
Total Europe . . . .	§) 40,636	39,748	40,724	102.2	99.8	534,191	512,458	477,641	953,914	915,104	852,934	104.2	111.8		
*U. S. S. R. w) . . . .	63,003	64,402	64,292	97.8	98.0	...	...	...	...	...	...	...	...		
Canada . . . .	584	774	960	75.5	60.8	3,594	5,005	7,917	6,418	8,938	14,138	71.8	45.4		
United States . . . .	2,716	3,326	3,254	81.7	83.5	12,945	22,629	22,608	23,116	40,409	40,371	57.2	57.3		
Total North Amer. . . .	3,300	4,100	4,214	80.5	78.3	16,539	27,634	30,525	29,534	49,347	54,509	59.9	54.2		
Turkey . . . .	...	504	656	...	...	5,512	4,368	5,310	9,842	7,800	9,482	126.2	103.8		
Algeria §) . . . .	4	3	4	113.7	94.5	22	15	28	39	27	49	147.5	79.1		
*Argentina . . . .	4) 1,656	4) 1,624	4) 1,232	102.0	134.4	...	7,275	3,999	...	12,992	7,141	...	...		
GRAND TOTALS . . . .	§) 44,444	44,355	45,598	100.2	97.5	556,264	544,475	513,504	993,329	972,278	916,974	102.2	108.3		

## BARLEY.

Germany . . . .	3,917	3,875	3,799	101.1	103.1	75,328	70,872	66,774	156,936	147,652	139,115	106.3	112.8		
Austria . . . .	423	416	398	101.7	106.3	7,970	6,045	5,615	16,604	12,590	11,698	131.9	141.9		
Belgium . . . .	80	94	77	85.8	103.9	1,860	2,256	1,844	3,876	4,701	3,842	82.4	100.9		
Bulgaria . . . .	576	568	601	101.3	95.8	6,678	6,769	7,065	13,912	14,102	14,720	98.7	94.5		
Spain . . . .	4,521	4,837	4,516	93.5	100.1	46,493	63,632	44,731	96,861	132,569	93,192	73.1	103.9		
Estonia . . . .	255	266	279	95.8	91.3	1,653	2,212	2,500	4,608	5,209	7,408	66.1	...		
*Irish Free State . . . .	117	103	120	113.1	97.6	...	2,388	2,768	...	4,974	5,768	...	...		
Finland . . . .	314	308	280	101.7	112.0	...	3,556	3,944	3,261	8,218	6,795	90.2	109.0		
*France . . . .	6) 1,813	1,779	1,831	101.9	99.0	14,045	24,008	24,084	27,409	50,017	50,178	...	...		
Engl. and Wales . . . .	751	961	1,081	78.2	69.5	...	17,181	19,663	29,260	35,793	40,965	81.7	71.4		
*Scotland . . . .	61	69	105	88.6	58.2	...	1,478	2,092	...	3,080	4,359	...	...		
Greece . . . .	550	519	481	105.9	114.2	...	4,616	3,288	...	9,618	6,850	110.2	154.8		
Hungary . . . .	1,203	1,160	1,100	103.7	109.4	16,967	15,854	12,977	35,348	33,030	27,037	107.0	130.7		
Italy 1) . . . .	505	530	569	95.3	88.8	4,972	5,538	5,261	10,359	11,537	10,961	89.8	94.5		
Latvia . . . .	456	457	432	99.8	105.6	4,051	4,247	3,476	8,440	8,849	7,242	95.4	116.5		
Lithuania . . . .	512	497	487	103.0	105.1	5,060	5,268	4,626	10,541	10,975	9,638	96.0	109.4		
Luxemburg . . . .	8	8	9	93.1	81.3	104	104	123	214	216	256	98.9	83.4		
Malta 7) . . . .	4	6	7	92.1	84.3	119	129	143	248	269	297	91.9	83.5		
Netherlands . . . .	66	72	88.4	60.5	...	1,186	1,301	1,933	2,471	2,710	4,027	91.2	61.4		
Poland . . . .	2,976	2,982	2,984	99.8	99.7	30,424	30,883	32,640	63,384	64,341	68,001	98.5	93.2		
Portugal . . . .	...	192	174	...	...	690	1,151	937	1,438	2,398	1,953	60.0	73.7		
Rumania . . . .	4,473	4,416	4,676	101.3	95.7	41,888	32,345	41,001	87,268	67,387	85,421	129.5	102.2		
Sweden . . . .	293	293	306	100.0	95.6	4,440	5,234	4,939	9,250	10,904	10,290	84.8	89.9		
Switzerland . . . .	17	17	17	98.8	99.8	295	285	270	615	593	562	103.8	109.5		
Czechoslovakia . . . .	1,642	1,762	1,766	93.2	93.0	26,744	33,177	28,228	55,717	69,121	58,809	80.6	94.7		
Total Europe . . . .	§) 23,714	24,213	24,111	97.9	98.3	299,611	313,041	291,295	624,197	652,181	606,880	95.7	102.9		
*U. S. S. R. w) . . . .	711	872	1,009	81.6	70.5	—	—	—	—	—	—	—	—		
Canada . . . .	3,646	3,758	4,728	97.0	77.1	30,860	38,771	51,665	64,291	80,773	107,637	79.6	59.7		
United States . . . .	10,540	13,212	11,947	79.8	88.2	76,483	143,976	130,034	159,339	299,950	270,905	53.1	58.8		
Total North Amer. . . .	14,186	16,970	16,675	83.6	85.1	107,343	182,747	181,699	223,630	380,723	378,542	58.7	59.1		

COUNTRIES	†) AREA						†) PRODUCTION								
	1933	1932	Average 1927 to 1931	% 1933/34	Aver. 1933 = 100		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933/34	1932 — 1933/ 1933 = 100	Aver. 1933 = 100
	1933/34	1932/33	1927/28 to 1931/32	1932/ 1933 = 100			1933/34	1932/33	1927/28 to 1931/32	1933/34	1932/33	1927/28 to 1931/32	1932 — 1933/ 1933 = 100		
	1,000 acres						1,000 centals			1,000 bushels					
Korea . . . . .	...	...	2,297	...	...		20,979	21,161	18,124	43,708	44,086	37,759	99.1	115.8	
Japan . . . . .	1,940	2,107	2,198	92.1	88.2		34,042	37,316	37,758	70,922	77,744	78,664	91.2	90.2	
Syria a. Lebanon	726	794	824	91.5	88.2		...	4,463	8,701	...	9,299	18,127	...	...	
Turkey . . . . .	...	3,401	3,266	...	...		26,660	25,679	28,035	59,710	53,499	58,407	111.6	102.2	
Total Asia . . .	§) 7,638	7,805	7,761	97.8	98.4		83,681	84,156	83,917	174,340	175,329	174,830	99.4	99.7	
Algeria . . . . .	3,277	3,339	3,427	98.1	95.6		14,165	14,833	17,277	29,510	30,902	35,995	95.5	82.0	
Egypt . . . . .	292	366	359	79.9	81.5		4,434	5,792	5,340	9,237	12,067	11,126	76.5	83.0	
Eritrea . . . . .	69	99	52	70.0	132.1		432	617	167	900	1,286	347	70.0	259.3	
French Morocco .	3,439	3,298	3,008	104.3	114.3		23,060	22,630	21,725	48,042	47,147	45,261	101.9	106.1	
Tunis . . . . .	865	1,507	1,197	57.4	72.2		2,646	7,496	4,010	5,512	15,616	8,355	35.3	66.0	
Total Africa . .	7,942	8,609	8,043	92.3	98.7		44,737	51,368	48,519	93,201	107,018	101,084	87.1	92.2	
Argentina . . . .	4) 1,680	4) 1,520	4) 1,368	110.6	122.8		...	15,432	7,803	...	32,151	16,256	...	...	
GRAND TOTALS .	§) 53,480	57,597	56,590	92.8	94.5		535,372	631,312	605,430	1,115,368	1,315,251	1,261,336	84.8	88.4	

OATS.															
Germany . . . . .	7,863	8,117	8,578	96.9	91.7		151,685	146,613	143,683	474,013	458,163	449,005	103.5	105.6	
Austria . . . . .	759	784	759	96.8	100.0		12,229	10,020	9,192	38,216	31,312	28,726	122.0	133.0	
Belgium . . . . .	733	712	694	102.9	105.6		16,348	16,763	14,894	51,088	52,385	46,544	97.5	109.8	
Bulgaria . . . . .	306	281	330	108.9	92.9		2,815	2,488	2,348	8,798	7,777	7,339	113.1	119.9	
Spain . . . . .	1,599	1,926	1,926	83.0	83.0		12,856	18,309	13,528	40,176	57,215	42,461	70.2	94.6	
Estonia . . . . .	341	356	357	95.7	95.5		2,315	2,869	2,943	7,234	8,466	9,197	80.7	78.7	
Irish Free State .	650	632	645	102.8	100.7		14,049	14,409	14,100	...	45,904	44,062	...	...	
Finland . . . . .	1,110	1,124	1,106	98.7	100.4		12,917	14,759	13,291	40,365	46,122	41,535	87.5	97.2	
France . . . . .	8,383	8,371	8,547	100.1	98.1		...	106,221	106,172	...	331,938	331,785	...	...	
Engl. and Wales .	1,494	1,580	1,759	94.6	84.9		26,947	28,022	30,863	84,210	87,570	96,446	96.2	87.3	
Scotland . . . . .	854	867	872	98.5	97.9		...	16,710	14,999	...	52,220	46,872	...	...	
Greece . . . . .	324	304	293	106.8	110.8		3,050	2,325	1,615	9,533	7,266	5,046	131.2	188.8	
Hungary . . . . .	572	578	649	90.8	88.2		6,984	6,962	7,021	21,826	21,756	21,940	99.0	99.5	
Italy 1) . . . . .	1,095	1,113	1,238	98.4	88.4		12,184	13,378	13,036	38,076	41,805	40,738	91.1	93.5	
Latvia . . . . .	758	802	736	94.5	103.0		6,922	7,121	5,941	21,630	22,252	18,565	97.2	116.5	
Lithuania . . . .	848	922	820	92.0	103.5		7,957	7,857	7,830	24,865	24,553	24,469	101.3	101.6	
Luxemburg . . . .	69	69	72	100.6	95.0		1,049	1,018	951	3,279	3,182	2,970	103.1	110.4	
Netherlands . . .	337	350	376	96.3	89.8		6,799	6,693	7,165	21,247	20,916	22,392	101.6	94.9	
Poland . . . . .	5,480	5,487	5,224	99.9	104.9		54,013	52,709	53,999	168,791	164,714	168,747	102.5	100.0	
Portugal . . . . .	...	459	445	...	...		1,164	2,354	1,937	3,636	7,355	6,052	49.4	60.1	
Rumania . . . . .	2,016	1,956	2,655	103.1	75.9		20,724	14,169	22,199	64,761	44,276	69,372	146.3	93.4	
Sweden . . . . .	1,579	1,579	1,681	100.0	93.9		19,718	26,191	24,617	61,619	81,845	76,927	75.3	80.1	
Switzerland . . .	40	41	49	98.7	82.2		761	776	859	2,377	2,425	2,685	98.0	88.5	
Czechoslovakia .	1,983	2,027	2,078	97.8	95.4		30,918	36,681	30,540	96,618	114,628	95,437	84.3	101.2	
Total Europe . .	§) 29,765	30,567	31,825	97.4	93.5		410,355	418,077	408,512	1,282,358	1,306,483	1,276,595	98.2	100.5	
Canada . . . . .	13,576	13,138	12,997	103.3	104.5		107,768	133,131	130,976	336,776	416,034	409,297	80.9	82.3	
United States . .	37,023	41,193	39,590	89.9	93.5		220,047	396,234	379,047	687,647	1,238,231	1,184,522	55.5	58.1	
Total North Amer.	50,599	54,331	52,587	93.1	96.2		327,815	529,365	510,023	1,024,423	1,654,265	1,593,819	61.9	64.3	
Syria and Lebanon	28	28	35	100.0	79.2		...	298	238	...	931	743	...	...	
Turkey . . . . .	...	294	350	...	...		3,748	2,793	2,407	11,712	8,729	7,523	134.2	155.7	
Algeria . . . . .	521	488	592	106.9	88.1		3,042	2,786	4,138	9,507	8,707	12,932	109.2	73.5	
French Morocco .	74	56	83	131.1	88.6		668	405	673	2,086	1,267	2,105	164.7	99.1	
Tunis . . . . .	74	54	104	136.4	71.0		551	617	789	1,722	1,929	2,466	89.3	69.8	
Total Africa . .	669	598	779	112.0	85.8		4,261	3,808	5,600	13,315	11,903	17,503	111.9	76.1	
Argentina . . . .	4) 3,460	4) 3,652	4) 3,595	94.7	96.2		...	22,267	20,462	...	69,583	63,944	...	...	
GRAND TOTALS .	§) 81,327	85,790	85,541	94.8	95.1		746,179	954,043	926,542	2,331,808	2,981,380	2,895,440	78.2	80.5	

†) The two dates mentioned refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area are not yet available. — \* Countries not included in the totals. — w) Autumn crops. — x) Spring crops. — 1) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Including spelt and meslin. — 3) Unofficial data. — 4) Area sown. — 5) Oran only; 94% of total production. — 6) Area sown to 1 May. — 7) Barley and meslin.

*France* : Threshing has given generally excellent results and good quality. In the regions where harvest was late, much shrinkage was caused by the August heat.

Production of meslin this year will be 1,936,000 centals against 2,371,000 in 1932 and 2,129,000 on the average of the five years ending 1931. Percentages: 81.7 and 90.9.

*Great Britain and Northern Ireland* : In Northern Ireland the weather during August was considerably below the average of the past eleven years. Temperatures were generally very high. Conditions were very suitable for harvest work. The greater part of the wheat crop had been saved by the end of the month. Autumn sown wheat is generally a good crop, but where sowing was done late in spring the crop is not so satisfactory. Reports as to the produce are variable, but generally it would appear that while the straw is of average length the yield of grain will be below expectations.

The oat crop ripened very early and by the end of the month had mostly been harvested. There is a good average yield of straw in most districts but it is feared that the very rapid ripening has had an adverse effect on the quantity and quality of the grain. The barley has been harvested in most districts and the yield promises to be satisfactory. In Scotland, in the principal grain-growing districts, the weather was dry and very favourable for the ripening and harvesting of cereal crops which were generally secured in excellent order. In the western countries, however, some of the oat crop was lodged by rain. The straw is rather short owing to lack of moisture during the growing period.

In England and Wales August weather was mostly hot and dry. Conditions this year have been most favourable for the cereal harvest which commenced in July and had been generally completed by the end of August.

*Greece* : According to an unofficial estimate the area cultivated this year to meslin exceeds by 6,000 acres that of the last year (138,000 acres) and should therefore be 144,000 acres. Percentages in relation to 1932 and to the average of 1927-31: 104.3 and 127.6.

*Hungary* : During the three weeks period August 26 to September 16, the weather was characterised by rather low temperatures and small quantities of precipitation. Threshing of cereals was almost finished towards mid-September. The quality of the grain is in general good and in some districts very good. The quality of the other cereals is also generally satisfactory. Preparatory work for the winter sowings has begun, but for their continuation rain be necessary.

*Italy* : The weather during August was rather good. During the first ten days rainfall was rare in northern Italy and in parts of central Italy; it was abundant in some areas of southern regions; during the second and third decades, precipitation was, on the contrary, considerable in several northern areas, abundant in Apulia and nearly the whole of Sicily and scarce or absent in other regions. At the end of August, wheat threshing could be considered finished. Autumn field work has begun, somewhat in delay in some districts owing to drought.

*Latvia* : During August, the average temperature was in general below the normal, particularly in the eastern regions of the country. In some regions, precipitation exceeded the normal quantity by as much as 50 % whereas in others it was below the average.



Despite rainy weather, there was a fine period which favoured harvesting operations. In the last few days of the month sharp frosts occurred in the eastern part of the country and violent winds caused considerable damage.

*Lithuania* : Weather conditions were very favourable to cereals during the first half of August. During the latter half rainfall hindered harvesting. Rye and most of the wheat crop have given good yields. Spring crops and part of the winter wheat crops have been damaged by rain but not seriously.

Production of meslin this year will be about 2,688,000 centals (4,635,000 bushels) against 2,304,000 (3,972,000) in 1932 and 2,349,000 (4,051,000) on the average of the five years ending 1931. Percentages 116.7 and 114.4.

*Luxemburg* : Thanks to fine weather during August, cereals were gathered under very good conditions..

*Netherlands* : Wheat has yielded well. The rain has caused some laying of little importance ; little damage by "take all" is reported. The rye crop is also satisfactory despite laying as a result of the May rains. The same is reported for oats.

*Portugal* : The severe drought in August has seriously damaged cereal crops throughout the country. Seasonal field work is proceeding normally.

*Czechoslovakia* : During the first half of August the warm, dry weather of the latter half of July continued. In the latter half of August, the temperature was remarkably low and frequent rains fell ; towards the end of the month fine weather returned.

The cereal harvest was effected later than usual ; owing to the dry, warm weather, however, it proceeded rapidly and was interrupted only by bad weather in elevated areas. The wheat yield per hectare is the highest obtained since 1928. Quality is excellent. The rye yield per acre is good but smaller than that of wheat. Yields of barley and oats are also satisfactory.

Area and production of mixed grain and spelt is as follows :

	1933	1932	Average 1927-31	% 1933 1932 = 100	Aver. 1927-31 = 100
<i>Area</i> (thousand acres).					
Mixed grain . . . . .	16.9	19.2	24.5	88.1	69.0
Spelt . . . . .	1.3	2.0	0.8	62.4	161.6
<i>Production</i> (thousand centals).					
Mixed grain . . . . .	247	286	304	86.2	81.1
Spelt . . . . .	15.7	22.3	7.4	70.5	213.0

*Yugoslavia* : Despite variable and rather rainy weather in August, harvesting was almost finished and threshing and transport of cereals was taking place under good conditions. Forecasts of a good wheat crop are confirmed despite damage by prolonged rain during the ripening period. Owing to harvest delay, the official estimate of wheat production has not yet appeared.

*U. S. S. R.* : Towards September 10, harvesting had been finished throughout the country, but, on the 15th of the month, 21 % of the crop harvested still remained in the fields, giving rise to some anxiety, particularly in the centre and the north of the Union where the first half was rainy, as the crops had not been stocked.

No official estimate of production had been published ; fragmentary information published in the press of the country indicates that production was good in the Ukraine, in the north Caucasus and also in other regions.

The winter sowing season is proceeding actively ; on September 15, 50,697,000 acres had been sown to winter crops, representing 54.0 % of the plan whereas at the same date of last year, only 45,117,000 acres had been sown.

*Argentina* (Telegram of 19 September) : The weather conditions during the first half of September, owing to general rains, favoured the crops, condition of which had greatly improved. The wheat crop made rapid progress.

*Canada* : Generous rains fell throughout Eastern Canada and the southern areas of the Prairie Provinces during the last week of August, ending a prolonged dry spell which was causing anxiety throughout Canada. Late grains were all improved throughout eastern Canada as a result. Harvesting was proceeding rapidly in the Prairie Provinces in spite of delays due to rain. Cutting of wheat was well along with threshing general in early districts. Cutting had commenced in Northern Alberta and the Peace River district and was expected to be general in a week's time. Extreme drought and heat were experienced in British Columbia during the last two weeks of the month. The Canadian Government communicated that, during the first week of September, two main factors affected the crop situation in the Prairie Provinces. In the first place, damaging frosts were received in the Peace River district and moderate frosts over a wide area in northern and central Alberta ; these frosts were sufficiently severe to damage late crops. The extent of the actual frost damage will not be apparent until threshing is under way in the affected areas.

In the second place harvesting was interrupted throughout the three Provinces by varying amounts of rainfall during the week. Precipitation was heavy in central and northern Manitoba, southern and northern Saskatchewan and moderate to light throughout most districts in Alberta with the exception of the Peace River district, where substantial rains and some snow were received. In general, harvesting was well advanced in Manitoba, southern and central Saskatchewan and southern Alberta ; rains were advantageous in improving the feed situation. In northern Saskatchewan and central and northern Alberta, a continuance of wet weather would delay ripening of late crops and harvesting generally.

According to a telegram of September 11, yields of all grain are much below the average and show close relation to the dry season of 1931. The wheat production forecast is the lowest since 1924. Late sown crops are about 20 % below the average. Rain and snow interrupted the western harvest and deliveries were slow. Serious damage to yield and grade of grain was caused by frosts in the Peace River country.

*Palestine* : The quality of the wheat, now all threshed, is generally poor, much of the grain being small and shrivelled.

*United States* : In the winter wheat States the land was in good condition for working at the end of August and sowing had begun. In the first week of September sowing advanced very well in the Great Plains ; some sections were still too dry for ploughing. These conditions remained unchanged up to the middle of September. The winter wheat sowings were advancing well on September 21. The crop situation was unchanged on September 27.

*French Morocco* : Threshing was finished in August. Results varied greatly. In eastern Morocco, the areas of Martinprey and El Allet were the most favoured ; yields

have reached 1,340 lb. per acre. Elsewhere they were lower owing to shrinkage and rust. Specific weight was low. Selected wheat has proved to be superior to local varieties and in many cases over 1,800 lb. per acre has been obtained under the same conditions. The advantageous influence of manuring and cultivated fallow has been particularly in evidence this year. At Meknes, threshing has been finished and deliveries to the dock-silos confirmed the estimates made of the crop which will be smaller than that of last year despite the larger area sown. Preparatory work has again begun after the completion of the harvest and threshing on many farms.

*Tunis*: Cereal production is below the average owing to large damage by frost, drought and cecydomia.

*Union of South Africa*: Conditions in the Union have been generally unfavourable for the winter grain crops on account of the continuous drought. In the southwestern districts of the Cape Province, rainfall has, however, been very heavy and prospects are favourable. Good rains have also fallen on the West Coast districts and the planting and sowing of wheat was extensive during July. Along the South Coast fair crops may also be reaped but throughout the inland areas of the Union, production will be very low.

*Australia*: According to a telegram of September 14 rainfall in New South Wales was unsatisfactory over the main wheat area and this year's yield is expected to be much less than that of last year. In Victoria the crop aspect is favourable. In Southern Australia rainfall was general during the early part of this month. Crop condition has greatly improved since the previous report and an average yield is expected. In Western Australia the crop looks healthy and crop condition has improved.

## MAIZE

The information received at the Institute up to mid-September shows that, in most countries which have furnished statistical data, the area under maize this season does not differ greatly from the average of 1927-1931 and that the areas are in general, smaller. Of the maize exporting countries, only Rumania shows an increase in area (+ 2.4 %) compared with last year, whereas Bulgaria, Hungary and the United States show decreases. Italy, which is a large producer and also an importer of maize, has reduced the area cultivated by 1.7 % compared with last year and by 5.6 % compared with the average of 1927-1931.

Data for Yugoslavia and the U. S. S. R., among the large European producing countries, are lacking.

As regards the progress of growth in the Danubian countries, Rumania, Yugoslavia, Hungary and Bulgaria, the weather in August was fairly favourable to maize, except in Hungary, where the lack of water checked growth. At the end of August, the maize crop was still not safe, owing to the large delay to growth at this period, particularly in the hill regions of Rumania; warm, dry weather during September was, in fact necessary for the completion of ripening. During the first half of the month, the weather was rather cold and rainy in Rumania with the result that forecasts of production are being lowered; on September 21, the Rumanian Government also transmitted to the Institute the first estimate of 99 million centals ( 177 million bushels), namely, 24.9 %

below the final figure of last year and 3.3 % below the average of 1927-31, but September weather will not be taken sufficiently into account until the second estimate is made.

### Maize.

COUNTRIES	AREA					CROP CONDITION (†)								
	1933	1932	Average 1927 to 1931	% 1933		I-IX-1933			I-VIII-1933			I-IX-1932		
				1932	Aver.									
				= 100	= 100									
1,000 acres														
						a)	b)	c)	a)	b)	c)	a)	b)	c)
Austria . . . . .	...	148	145	...	...	2.8	—	—	—	3.0	—	2.6	—	—
Bulgaria . . . . .	1,705	1,829	1,726	93.2	98.8	140	—	—	140	—	—	140	—	—
Spain . . . . .	1,059	1,102	1,053	96.0	100.5	—	—	—	—	—	—	—	—	—
France 1) . . . . .	813	782	806	103.9	100.8	—	—	—	—	—	—	—	—	—
Greece . . . . .	2) 687	654	521	105.0	131.7	—	—	—	—	—	—	—	—	—
Hungary . . . . .	2,862	2,905	2,670	98.5	107.2	—	—	—	—	—	—	—	—	—
Italy . . . . .	3) 3,181	3,259	3,489	97.6	91.2	—	—	—	—	—	—	—	—	—
	4) 342	324	243	105.6	140.5	—	—	—	—	—	—	—	—	—
Rumania . . . . .	12,081	11,803	11,195	102.4	107.9	e)	—	—	e)	—	—	—	—	—
Switzerland . . . . .	2	3	3	98.7	86.7	...	...	...	—	—	95	—	—	93
Czechoslovakia . . . . .	331	338	349	99.3	94.6	—	—	—	—	—	—	—	—	—
Yugoslavia . . . . .	...	6,488	5,893	...	...	—	—	—	—	—	—	—	—	—
Canada . . . . .	134	130	143	103.1	93.6	—	—	75	—	—	78	—	—	93
United States . . . . .	103,022	107,776	100,519	95.6	102.5	—	—	—	—	—	66.5	—	—	—
Syria and Lebanon . . . . .	63	61	96	104.4	65.9	—	—	—	—	100	—	—	—	—
Algeria . . . . .	19	20	24	91.9	78.4	—	—	—	—	90	—	—	—	90
Egypt . . . . .	...	2,043	2,071	...	...	—	100	—	—	100	—	—	100	—
Eritrea . . . . .	10	7	18	133.3	56.3	—	—	—	—	—	—	—	—	—

(†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 591. — 1) Areas sown to 1 June. — 2) Unofficial calculated data. — 3) Main crop ("maggengo"). — 4) Second crop ("cinquantino").

In the European maize producing and importing countries (Italy, France, Spain and Portugal) the maize crop has suffered from the drought, especially at the end of the growing period. Only Spain has published the first estimate of production this year, which is 18.7 % smaller compared with last year and 12.8 % below the average of 1927-31.

The latest estimate of production in the United States confirms the forecasts of a poor crop. Egypt, the most important producer of maize on the African continent reports a production slightly above that of last year and the average of 1927-31.

The absence of data of production for the most important producing countries such as the U. S. S. R. (production of which represented 3.3% of world production for the period 1925-1929), Yugoslavia (2.8 %) and Italy (2.2 %), at present prevents an estimate of production for the northern hemisphere. The data published in the table for the United States, Rumania, Egypt, Hungary, Bulgaria and other countries are, nevertheless, sufficiently complete to justify the inference that production in the northern hemisphere this year should be considerably below that of last year and also, though to a smaller extent, below the average of 1927-1931.

*Production of Maize.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand bushels				
Bulgaria . . . . .	21,746	23,246	16,098	38,833	41,511	28,747	93.5	135.1
Spain . . . . .	12,423	15,280	14,245	22,184	27,286	25,438	81.3	87.2
Hungary . . . . .	39,999	53,617	34,016	71,426	95,746	60,743	74.6	117.6
Rumania . . . . .	99,208	132,123	102,555	177,158	235,934	183,134	75.1	96.7
Switzerland . . . . .	60	62	75	106	110	135	96.4	78.6
Czechoslovakia . . . . .	4,727	6,819	5,248	8,440	12,176	9,371	69.3	90.1
United States . . . . .	1,279,600	1,610,319	1,406,123	2,285,000	2,875,570	2,510,933	79.5	91.0
Turkey . . . . .	9,921	8,267	9,227	17,716	14,762	16,477	120.0	107.5
Algeria 1) . . . . .	54	38	62	96	68	111	142.4	87.1
Egypt . . . . .	43,598	42,591	42,314	77,854	76,055	75,561	102.4	103.0
Eritrea . . . . .	88	66	138	157	118	247	133.3	63.7

1) Oran only.

V. DE.

\* \* \*

*Austria* : The maize stalks are generally short but the cobs are numerous and of normal size.

*Bulgaria* : The heavy rains which fell towards the end of August greatly favoured the growth of maize.

*Hungary* : Owing to the drought, the growth of maize is backward. Many ears are withered or badly developed. Grain formation is defective. In the regions where moisture was sufficient, the crop is well developed, but grain formation has been slow owing to the cool weather.

*Italy* : Maize has been damaged by drought.

*Portugal* : Persistent drought in August damaged crops and production was estimated to be poor.

*Rumania* : At the beginning of September, according to official reports received by the Ministry of Agriculture of Rumania, the situation of the maize crop was as follows. The maize crop had need of moisture in the Bărăgan steppe (Department of Talomita), in the Carpathian districts of Muntenia and of Oltenia. The rains that fell in the first days of September completely satisfied this need of moisture. In the remainder of the country the rainfall was too abundant and prevented the normal development of the maize crop.

This year the sowing of maize was carried out very late on account of the cold and rainy spring in the whole country and of the floods in Transylvania, Bukovina and Moldavia. Growth is a week late in the Banat, two weeks late in Oltenia and 25 to 30 days late in the remainder of the country.

Taking account of the unfavourable weather conditions which had recently prevailed (first week of September), it was considered probable that, in the hilly districts and in the North of the country the maize would not be able to ripen fully everywhere. The threatened area may be estimated at 30 % of the total area.

On the plains of the Theiss, the Danube and the Prut, which are the principal producing districts, the maize will fully ripen.

*Czechoslovakia* : In Slovakia, which is the most important centre for this crop, maize has suffered from drought.

*Yugoslavia* : Rainfall during August was very favourable to the growth of the maize crop, production of which promises to be very abundant.

*Argentina* (Telegram of September 19) : Weather conditions for the maize sowings are very favourable and moisture facilitates the preparation of the soil.

*Chile* : The area sown to maize in 1932-33 was 164,000 acres against 134,000 in 1931-32 and 95,600 on the average of the five years ending 1930-31. Percentages 122.2 and 171.1.

*United States* : The crop condition of maize deteriorated during the last week of August in some parts of the belt. Little improvement was noted in the northern Ohio Valley. Iowa and Missouri crops were fair. Maize had begun to ripen at the beginning of September but parts of the Ohio Valley needed prolonged warmth. In the second week of September no change was reported. The grain was well ripened on September 21.

*Mexico* : Maize production began in July with yields varying from average to good.

*Palestine* : Unirrigated maize crops have been fed green for the most part, owing to lack of soil moisture. Yields are extremely poor, from 10 to 30 % of the average. The early crop in Northern Palestine is slightly better.

*French Morocco* : In August maize production began at Meknes, Casablanca and Marrakech. In Doukkala, maize yields were very irregular but seemed very good in Ouled ben Azziz.

*Tanganyika* : The amount of maize available for sale on 1 July 1933 was estimated at 72,000 centals (128,000 bushels).

*Tunis* : Weather conditions have in general been rather favourable for the growth of maize and sorghum.

## • RICE

*Spain* : According to the most recent estimate the area cultivated to rice this year will be about 116,000 acres against 123,000 acres in 1932 and 119,000 acres on the average of 1927-31. Percentages: 94.8 and 98.0.

The corresponding production is estimated at about 6,500,000 centals (14,500,000 bushels) against 7,000,000 centals (15,600,000 bushels) and 6,500,000 centals (14,500,000 bushels) on the average of 1927-31. Percentages: 93.2 and 99.9.

*Italy* : Growing conditions for rice remain good.

*United States* : Rice production is estimated at 23,940,000 centals (52,200,000 bushels) compared with 17,710,000 (39,356,000) in 1932 and 19,776,000 (43,947,000) on the average for 1927-31; percentages: 135.2 and 121.1.

*Mexico* : Crop condition of rice varies from average to good in the principal centres of production.

*British Malaya* : The weather during the month of July was normal throughout the Peninsula except for North Perak, Negri Sembilan and Pahang, where the rainfall was slightly in excess of the average for July. Activities in the preparation of land and sowing of the new crop were reported from the important padi areas of Kedah, Province Wellesley, and Krian. The planting of dry padi was in full swing in Kelantan towards the end of the month when favourable weather for the operation was experienced. In Negri Sembilan, transplanting was practically completed except for Kuala Pilah district where, as in some districts of Perak, padi cultivation operations were suffering some delay from rival claims on the time of the cultivator provided by a ripening fruit crop and the rise in the price of rubber, which has had the effect of inducing increased interest in the rubber crop at the expense of the padi crop. In Malacca, transplanting was in progress in the Jasin and Alor Gajah districts. The planted crop in Selangor, Pahang and the major portion of Negri Sembilan was reported to be making good progress. The attempt at the production of a short inter-season padi crop at Sri Menanti in Negri Sembilan was not proving very successful owing to lack of interest by the cultivators concerned.

*Formosa* : Growing conditions of second crop rice were good. The weather was generally favourable and slight damage was reported.

*India* : In Bengal rainfall in August was mostly moderate to heavy. At the end of the month the transplantation of winter paddy was advanced ; the harvesting of autumn paddy was progressing. In Bihar and Orissa rainfall was general and in many districts heavy with damage by flooding in a few districts. Moderate to heavy rains fell in Madras during August. Sowing and transplanting of paddy was proceeding in the Circars and the Deccan.

*Egypt* : Growth of the rice crop is progressing owing to favourable weather and adequate irrigation water. Production is forecast at 12,905,000 centals (28,677,000 bushels) against 12,135,000 (26,966,000) in 1932 and 7,984,000 (17,743,000), 1927-31 average ; percentages : 106.3 and 161.6. Crop condition as on 1 September : 101 for the *Sefi* crop and 100 for the *nili*, against 100 and 100 at the same date last year.

*Tanganyika* : The amounts of rice and paddy available for sale on 1st July 1933 were estimated at 223,000 and 132,000 centals (496,000 and 292,000 bushels) respectively.

## POTATOES

*Austria* : At the end of August, the growth of potatoes was backward. Lifting of early potatoes is in progress. Yields vary greatly and quality is not very satisfactory. Main crop potatoes are in general satisfactory.

*Irish Free State* : The weather during August was ideally summerlike with rain on only a few days. If anything the heat was rather prolonged for the good of the crops. No damage to crops was however reported.

*France* : Potatoes were too much damaged by the long drought to increase in weight after the rains of the first half of September which, nevertheless, improved the situation.

*Great Britain and Northern Ireland*: The prospects of the potato crop in Ireland were not quite so good as in the previous month. Excellent crops of early variety potatoes were raised and the lifting of the varieties was practically completed at the end of the month. The main crop, however, is not expected to yield as well as in 1932, particularly where planting was done late in the season. Although blight was prevalent, it did not become a menace, spraying and unfavourable weather conditions keeping it in check. There is little evidence of blighted tubers in crops at present.

### Potatoes.

COUNTRIES	AREA					CROP CONDITION (†)									
	1933	1932	Average 1927 to 1931	% 1933											
				1932 = 100	Aver. = 100	I-IX-1933			I-VIII-1933			I-IX-1932			
						Thousand acres		a)	b)	c)	a)	b)	c)	a)	b)
Germany. . . . .	606	624	593	97.1	102.2	—	—	—	2.6	—	—	—	—	—	—
<i>s)</i> . . . . .	6,532	6,490	6,388	100.7	102.3	2.7	—	—	2.5	—	—	—	2.6	—	—
*Austria . . . . .	...	511	467	...	...	2.5	—	—	2.1	—	—	—	2.6	—	—
Belgium . . . . .	404	435	415	92.7	97.2	—	100	—	—	—	—	—	—	—	—
Bulgaria . . . . .	37	37	29	100.0	128.9	150	—	—	150	—	—	150	—	—	—
*Denmark . . . . .	...	172	163	...	...	—	—	94	—	—	93	—	—	98	—
Spain . . . . .	976	1,033	889	94.5	109.8	—	—	—	—	—	—	—	—	—	—
Estonia . . . . .	171	166	165	103.0	103.5	...	...	...	—	75	—	—	—	94	—
Irish Free State . . . . .	352	348	357	101.3	98.7	—	—	—	—	—	—	—	—	—	—
Finland . . . . .	200	190	176	105.2	113.6	...	...	...	—	99	118	—	—	—	—
France <i>i)</i> . . . . .	3,419	3,442	3,585	99.3	95.4	—	—	—	—	—	—	—	—	—	—
England and Wales . . . . .	518	504	479	102.8	108.3	—	—	—	—	—	—	—	—	—	—
Scotland . . . . .	153	149	137	103.0	111.3	—	—	95	105	—	—	—	—	—	—
Greece . . . . .	<i>a)</i> 46	38	27	121.4	171.6	—	—	—	—	—	—	—	—	—	—
Hungary . . . . .	735	738	674	99.6	109.0	—	—	—	—	—	—	—	—	—	—
Italy . . . . .	987	1,022	871	96.6	113.3	—	—	—	—	—	—	—	—	—	—
Latvia . . . . .	257	253	216	101.7	118.9	—	—	—	—	—	—	—	—	—	—
Lithuania . . . . .	441	428	356	103.0	123.7	113	—	—	113	—	—	117	—	—	—
Luxemburg . . . . .	41	41	40	99.8	100.3	—	—	3.2	2.7	—	—	2.3	—	—	—
Malta . . . . .	7	7	7	95.6	97.9	—	—	—	—	—	—	—	—	—	—
*Norway . . . . .	...	123	119	...	...	—	—	93	—	—	95	104	—	—	—
Netherlands . . . . .	379	435	425	87.1	89.3	<i>a)</i> 71	—	—	<i>a)</i> 75	—	—	<i>a)</i> 78	—	—	—
Poland . . . . .	6,769	6,709	6,410	100.9	105.6	—	—	—	<i>a)</i> 3.4	—	—	—	—	—	—
Rumania . . . . .	484	471	491	102.8	98.7	—	—	80	—	—	—	—	—	—	—
*Sweden . . . . .	...	338	340	...	...	103	—	—	—	—	—	114	—	—	—
Switzerland . . . . .	117	115	116	101.9	101.1	—	100	—	—	98	—	—	—	87	—
Czechoslovakia <i>s)</i> . . . . .	96	94	79	102.0	121.1	—	—	—	—	—	—	—	—	—	—
<i>i)</i> . . . . .	1,735	1,718	1,695	101.1	102.4	2.9	—	—	—	—	—	2.7	—	—	—
Canada . . . . .	525	521	574	100.7	91.5	—	—	80	—	—	84	—	—	91	—
United States . . . . .	3,223	3,371	3,208	95.6	100.5	—	—	—	—	—	—	—	—	—	—
Syria and Lebanon . . . . .	17	18	17	94.3	98.6	—	—	—	—	100	—	—	—	—	—
Algeria <i>i)</i> . . . . .	31	24	26	126.5	120.1	...	...	...	—	—	95	—	100	—	—
TOTAL . . . . .	29,258	29,421	28,445	99.4	102.8	—	—	—	—	—	—	—	—	—	—

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 591 —

\*) Countries not included in the total. — *s)* Early potatoes. — *i)* Late potatoes. — *1)* Areas sown to on 1 June. — *2)* Unofficial calculated data. — *3)* Middle of the previous month.

being lifted. In the eastern counties of Scotland the growth of potatoes was checked and the crop ripened rather prematurely as a consequence of the dry conditions. In the West the rainfall was sufficient for the development of the tubers but the haulms now show signs of disease. Crop condition was not so good as a month ago. In England and Wales the potato crop is ripening too rapidly owing to the dry weather and the tubers are smaller than usual except in the Northwest where rain has fallen.



The crop generally appears to be free from disease and where lifted the tubers are sound and in good condition. The yield per acre is forecast at 6.4 tons per acre or 0.2 tons above the ten year average.

*Hungary* : At mid-September, the production of early potatoes was in progress in many districts. Owing to the drought, the tubers are generally not very well developed.

*Lithuania* : Weather conditions were, in general favourable to potatoes. During the latter half of August there was an excess of moisture which did not, however, cause any damage.

*Production of potatoes.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932	Average
	Thousand centals			Thousand short tons			= 100	= 100
Germany 1) . . .	66,489	61,789	62,078	110,814	102,980	103,462	107.6	107.1
Belgium . . . . .	79,226	97,864	76,679	132,041	163,103	127,797	81.0	103.3
Bulgaria . . . . .	1,698	2,134	1,000	2,829	3,556	1,667	79.6	169.7
Estonia . . . . .	14,793	17,258	16,374	24,655	28,762	27,289	85.7	90.3
Spain . . . . .	91,411	110,799	92,242	152,348	184,662	153,734	82.5	99.1
Finland . . . . .	24,751	21,680	17,978	41,251	36,133	29,963	114.2	137.7
Hungary . . . . .	46,374	34,336	39,386	77,289	57,226	65,642	135.1	117.7
Latvia . . . . .	25,649	26,569	19,323	42,748	44,281	32,204	96.5	132.7
Luxemburg . . . . .	3,724	4,854	4,078	6,207	8,091	6,796	76.7	91.3
Malta . . . . .	451	564	645	752	941	1,075	80.0	70.0
Netherlands . . . . .	64,651	81,130	72,255	107,749	135,215	120,423	79.7	89.5
Poland . . . . .	621,706	660,827	652,888	1,036,155	1,101,357	1,088,125	94.1	95.2
Sweden . . . . .	35,869	47,039	34,432	59,781	78,397	57,386	76.3	104.2
Switzerland . . . . .	16,700	14,438	15,368	27,833	24,063	25,613	115.7	108.7
Czechoslovakia 1) . . .	6,832	7,533	6,612	11,387	12,555	11,020	90.7	103.3
United States . . . . .	175,601	214,607	220,269	292,668	357,679	367,116	81.8	79.7
Eritrea . . . . .	4	7	4	7	11	7	66.7	107.5

1) Early potatoes.

*Luxemburg* : Persistent drought and the almost absolute lack of rains during August were detrimental to the normal growth of potatoes, production of which is rather mediocre.

*Netherlands* : The crop condition of potatoes is fairly good and in some regions even very good.

*Switzerland* : The potato crop continues to show a favourable appearance.

*Czechoslovakia* : The prolonged drought from mid-July to mid-August was unfavourable to the crops. Rains in the latter half of August were nevertheless beneficial and, if moisture is adequate, potatoes may continue to fill out.

*Chile* : Area sown of potatoes in 1932-33 has been 137,900 acres against 126,700 in 1931-32 and 102,700 on the average of the five years ending 1930-31. Percentages : 108.9 and 134.2.

*Palestine* : Very poor yields are expected from potato crops, owing to lack of soil moisture.

## SUGAR SEASON

At the end of August, in most of the European beet producing countries, the general state of the sugar beet crops was worse than at the end of July when it was fairly promising. This deterioration was due to the drought which was

*Acreeage of sugar-beet.*

COUNTRIES	1933 <sup>a)</sup>	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100
	acres				
Germany. . . . .	680,758	541,025	1,014,242	126	67
Austria . . . . .	109,000	105,500	80,693	103	135
Belgium . . . . .	130,985	132,109	148,720	99	88
Bulgaria . . . . .	27,200	29,700	45,149	92	60
Denmark . . . . .	106,000	93,916	90,842	113	117
Spain . . . . .	200,000	201,488	185,230	98	107
Irish Free State . . . . .	13,600	13,686	13,351	99	102
Finland . . . . .	6,800	5,856	5,283	116	129
France. . . . .	648,686	617,200	644,485	105	101
Great Britain. . . . .	365,700	255,648	244,944	143	149
Hungary. . . . .	108,204	104,564	167,468	103	65
Italy . . . . .	210,640	207,334	267,555	102	79
Latvia . . . . .	32,000	21,323	x) 7,191	151	45
Lithuania . . . . .	8,900	13,141	a) 6,978	68	127
Netherlands . . . . .	116,964	99,271	141,020	118	83
Poland. . . . .	253,800	286,792	498,624	89	51
Rumania. . . . .	98,800	45,420	126,905	218	78
Sweden . . . . .	121,454	100,720	90,593	121	134
Switzerland . . . . .	4,000	3,500	3,390	114	117
Czechoslovakia . . . . .	358,400	360,601	594,327	99	60
Yugoslavia. . . . .	53,047	81,887	124,182	65	43
<i>Total Europe a) . . .</i>	<i>3,656,938</i>	<i>3,320,681</i>	<i>4,501,172</i>	<i>110</i>	<i>81</i>
U. S. S. R. . . . .	3,240,000	s) 3,123,000	2,282,002	104	142
<i>Total Europe b) . . .</i>	<i>6,896,938</i>	<i>6,443,681</i>	<i>6,783,174</i>	<i>107</i>	<i>102</i>
Canada . . . . .	42,000	45,000	48,273	93	87
United States . . . . .	945,000	812,000	708,200	116	133
<i>Total North America . . .</i>	<i>987,000</i>	<i>857,000</i>	<i>756,473</i>	<i>115</i>	<i>130</i>
Japan . . . . .	22,151	24,076	23,567	92	94
Turkey . . . . .	55,708	37,383	21,642	149	257
<i>Total Asia . . .</i>	<i>77,859</i>	<i>61,459</i>	<i>45,209</i>	<i>127</i>	<i>172</i>
GENERAL TOTALS. . . { a)	4,721,797	4,239,140	5,302,854	111	89
{ b)	7,961,797	7,362,140	7,584,856	108	105

\* ) Approximate data. — a) Not including U.S. S. R. — b) Including U.S. S. R. — x) Average 1929 to 1931. — a) Year 1931. — 3) Harvested area: sown area was 4,038,000 acres.

prolonged during nearly the whole of August. Growth was slow, the roots remained small and the leaves began to yellow with the result that in the last ten days of the month, the situation was rather poor in some countries for example, Germany, Poland and Czechoslovakia. In the first half of September, with some rainfall, the situation improved, particularly in Poland; where, at the end of August, the condition of beet had given rise to anxiety; towards the middle of September, after some copious rains and a fall in the temperature, which

## 1933-34 Campaign — Analysis of Sugar Beets.

COUNTRIES	Average weight of root			Average weight of leaves			Sugar content			Weight of sugar per root		
	1933	1932	1927 1931	1933	1932	1927 1931	1933	1932	1927 1931	1933	1932	1927 1931
	oz.	oz.	oz.	oz.	oz.	oz.	%	%	%	oz.	oz.	oz.
4th WEEK OF AUGUST.												
Germany . . .	11.8	13.7	12.6	16.0	18.8	17.8	15.9	15.6	14.8	1.8	2.1	1.8
Denmark . . .	13.1	—	8.1	15.1	—	13.5	14.1	—	12.9	1.5	—	1.0
France . . .	12.1	14.9	12.1	14.5	19.5	1) 17.3	14.8	12.6	15.2	1.8	1.9	1.8
Netherlands . .	21.1	—	2) 16.6	—	—	—	15.8	—	2) 15.7	3.5	—	2.6
Czechoslovakia	11.8	14.7	13.5	13.3	16.5	14.0	16.2	15.9	15.3	1.9	2.3	2.1
LAST WEEK OF AUGUST.												
Germany . . .	12.9	14.8	—	15.8	17.4	—	16.3	15.7	—	2.1	2.3	—
Belgium . . .	16.1	17.0	2) 16.3	22.9	27.5	2) 20.0	14.7	14.0	2) 16.1	2.4	2.4	2) 2.6
Denmark . . .	14.8	—	3) 11.2	14.7	—	3) 13.0	14.7	—	3) 15.5	2.2	—	3) 1.7
France . . .	13.5	—	4) 12.9	14.2	—	4) 17.7	15.2	—	4) 16.9	2.0	—	4) 2.2
Czechoslovakia . .	12.5	16.1	5) 14.9	12.3	16.0	5) 14.9	17.0	16.7	5) 15.6	2.1	2.7	5) 2.3
1st WEEK OF SEPTEMBER.												
Germany . . .	14.3	16.2	14.3	15.0	16.6	17.9	17.2	16.1	15.8	2.4	2.5	2.3
Denmark . . .	16.0	—	12.4	14.3	—	15.1	15.5	—	15.2	2.5	—	1.9
Finland . . .	12.4	15.3	6) 12.1	21.1	26.4	6) 21.8	12.9	13.6	6) 12.7	1.6	2.1	6) 1.6
France . . .	14.4	16.2	3) 14.4	13.8	20.2	3) 19.4	16.1	14.4	3) 16.5	2.3	2.3	3) 2.4
Netherlands . . .	25.1	—	7) 19.2	—	—	—	17.0	—	7) 14.8	4.3	—	7) 2.8
Czechoslovakia . .	13.2	16.8	15.3	11.5	13.7	13.3	17.9	17.3	16.5	2.4	2.9	2.5
2nd WEEK OF SEPTEMBER.												
Germany . . .	15.1	18.1	15.5	13.8	16.4	17.9	18.4	16.6	16.5	2.7	3.0	2.5
Belgium . . .	18.7	20.6	7) 18.7	21.3	27.0	7) 26.9	16.5	14.9	7) 14.7	2.7	3.1	7) 2.8
Denmark . . .	17.2	18.1	13.7	13.8	15.0	15.5	16.4	14.7	16.0	2.8	2.7	2.2
Finland . . .	15.5	17.8	14.9	23.5	25.6	25.2	14.4	14.7	13.2	2.2	3.6	2.0
France . . .	14.5	17.2	8) 16.3	12.6	16.9	8) 20.8	17.9	15.9	8) 15.6	2.6	2.7	8) 2.6
Czechoslovakia . .	14.0	17.4	16.2	11.0	12.6	13.0	18.6	17.9	17.2	2.6	3.1	2.8
3rd WEEK OF SEPTEMBER.												
Germany . . .	16.6	18.7	9) 16.9	14.3	15.4	9) 18.2	18.6	16.7	9) 16.7	3.0	3.1	9) 2.8
Denmark . . .	18.3	—	14.7	13.4	—	14.9	17.2	—	16.7	3.1	—	2.5
Finland . . .	16.4	20.1	6) 14.1	24.8	27.7	6) 23.1	15.3	15.1	6) 15.3	2.5	3.0	6) 2.2
France . . .	16.0	18.3	17.1	12.3	17.9	18.9	17.8	17.0	16.6	2.9	3.1	2.7
Czechoslovakia . .	14.3	17.8	16.9	10.4	11.7	12.3	19.0	18.2	17.6	2.7	3.2	3.0

1) Average 1927 to 1929 and 1931. — 2) Year 1929. — 3) Average 1929 to 1931. — 4) Average 1929 and 1930. —  
 5) Average 1927, 1930 and 1931. — 6) Average 1928 to 1931. — 7) Year 1927. — 8) Average 1927 and 1929 to 1931. —  
 9) Average 1927, 1928, 1930 and 1931.

improved the situation, an average crop was hoped for. In Germany and Czechoslovakia the condition of sugar beet crops improved a little remaining, however, not too satisfactory, owing to the inadequacy of moisture.

In France, where the situation was still poor, rains in September were particularly propitious.

Summarising, for the whole of the European countries it may be said that in the first half of September the general condition of beet had improved compared with the state at the end of August, though on the whole, the growth of beet, owing to drought, was a little backward, the roots were rather small for the period of the year and the leaves were sometimes yellowed. The general state is therefore inferior to that in the first few days of August and in many cases also to the average for the corresponding period of previous years.

*Sugar Beet.*

COUNTRIES	CROP CONDITION (†)								
	1st September, 1933			1st August, 1933			1st September, 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany . . . . .	2.8	—	—	2.5	—	—	2.6	—	—
Austria . . . . .	2.2	—	—	2.0	—	—	2.5	—	—
Belgium . . . . .	—	100	—	—	—	—	—	—	—
Bulgaria . . . . .	110	—	—	110	—	—	—	—	95
Denmark . . . . .	101	—	—	—	100	—	104	—	—
Scotland . . . . .	105	—	—	105	—	—	—	—	—
Netherlands 1)	74	—	—	75	—	—	77	—	—
Sweden . . . . .	123	—	—	—	—	—	123	—	—
Czechoslovakia . . . . .	—	3.0	—	—	—	—	2.5	—	—
Canada . . . . .	—	—	83	—	—	83	—	—	94

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 591. —

1) Middle of preceding month.

In the U. S. S. R., weather conditions were fairly propitious to the growth of the beet, rains were abundant and in some regions so copious as to favour the diffusion of weeds. Field work was effected fairly regularly and in any case better than last year. Production of beet is on the whole forecast to be a little smaller than the very abundant one of 1930 (310 million centals or 15,450,000 sh. tons).

E. R.

\* \* \*

*Austria* : At the end of August the appearance of sugar beet was generally good. The roots were already fairly well developed.

*Irish Free State* : The weather during August was ideally summerlike with rain on only a few days. If anything the heat was rather prolonged for the good of the crops. No damage to crops was however reported.

*France* : Rainfall, after a long period of drought, was too late and inadequate for an increase in weight ; on the whole, however, crop condition was average.

*Great Britain and Northern Ireland* : In Scotland the crop condition of sugar beet at the beginning of September was good. Progress made was very satisfactory. In England and Wales the weather during August was mostly hot and dry. Yields of sugar-beet are expected to be below the average in most districts but the sugar content is likely to be appreciably higher than usual.

*Hungary* : Towards mid-September sugar beet began to suffer from the drought. For the growth of the roots, more warmth and moisture will be necessary. Gathering has begun sporadically.

*Netherlands* : Sugar beet promise good yields following the rains which have compensated for the damage caused by the drought.

*Switzerland* : Sugar beet crops have suffered somewhat owing to drought.

*Czechoslovakia* : Dry, warm weather from mid-July to mid-August, was unfavourable to the crops ; despite beneficial rains in the latter half of August, crop condition of sugar beet on 1 September was below that of July 1.

The weather in the first half of September was rather dry, fine and cold ; rain fell nearly everywhere but was quite insufficient to compensate for the effects of the prolonged drought.

*U. S. S. R.* : The beet sowings have been finished 25 days earlier than last year in the Ukraine which comprises about 4/5 of the area cultivated in the Union. Field work has been better carried out and the loss of sowings by adversities, which last year reached 23 % of the area sown, is this year only 0.6 %. The growth of the plants is quite satisfactory. Harvesting, which began at mid-September, confirms the forecasts made of a good yield. The Ukrainian Government has finally fixed at 220,000,000 centals (11,000,000 short tons), the quantity which should be delivered to the Ukrainian sugar factories. In the central Black Earth region, another important beet producing centre, production is also forecast to be good, with an average yield of about 107 centals (5.4 short tons) per acre.

### *Production of Sugar-beet.*

COUNTRIES	ENGLISH MEASURES			AMERICAN MEASURES			% 1933	
	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
	Thousand centals			Thousand short tons			%	
Belgium . . . .	35,058	38,274	38,414	1,753	1,914	1,921	91.6	91.3
Bulgaria . . . .	4,098	5,291	5,893	205	265	295	77.5	69.5
Spain . . . . .	55,116	44,859	42,920	2,756	2,243	2,146	122.9	128.4
Hungary . . . .	19,769	18,717	30,545	988	936	1,527	105.6	64.7
Netherlands . .	37,578	34,613	41,192	1,879	1,731	2,060	108.6	91.2
Sweden . . . .	30,014	34,261	21,814	1,501	1,713	1,091	87.6	137.6
United-States . .	205,400	181,400	157,084	10,270	9,070	7,854	113.2	130.8

*United States* : Sugar cane production is estimated at 64,660,000 centals (3,233,000 short tons) compared with 67,180,000 (3,359,000) in 1932 and 50,072,000 (2,504,000) on the average for 1927-1931 ; percentages : 96.2 and 129.1 ; crop condition on September 1 was 81 % of the normal average yield. The estimate of sugar production remains unchanged from that published in the August Crop Report.

*Dutch Guiana* : Rainfall during the second quarter was very favourable to sugar cane which had suffered greatly from the previous drought.

*Barbados* : Production of sugar in 1932-33 is now estimated at 2,151,000 centals (107,500 short tons) as compared with 1,865,000 (93,000) in 1931-32 and 1,338,000 (6,700) the average for the preceding quinquennium. Percentages : 115.3 and 160.8. Production of fancy molasses, expressed in terms of sugar, is 464,000 centals (23,000 short tons) as against 432,000 (22,000) in 1931-32 and 442,000 (22,000) on the average. Percentages : 107.3 and 105.0.

*Mexico* : July weather was on the whole warm and dry. At the beginning of the month harvesting had been finished in the principal centres of production with satisfactory yields.

*St. Kitts-Nevis* : Sugar crop in 1932-33 is estimated at 541,000 centals (27,100 short tons) as compared with 447,000 (22,400) in 1931-32 and 367,000 (18,400), the average for the preceding quinquennium. Percentages : 121.0 and 147.5.

*Trinidad and Tobago* : The 1932-33 record crop, which exceeds by far any previous one, reaches 2,705,000 centals (135,000 short tons) as against 2,186,000 (109,000) in 1932-32 and 1,800,000 (90,000) the average for the preceding quinquennium. Percentages : 123.7 and 150.2.

Owing to the unprofitable condition of cocoa and coconuts, many proprietors in the sugar area had converted their small cocoa holdings into sugar farms, and more were doing so owing to the more attractive price obtained for sugar canes, but it happened that more canes were planted than the usines or factories could grind and many farmers were left with canes on their hands. It is hoped that some remedy may be found to get some of them out of their present difficulties but there will be a few to whom no relief can be given.

*Formosa* : Growing conditions of the cane planted from last summer to this spring were fairly good. The weather was generally favourable.

*India* : In the United Provinces rainfall varied during August, being insufficient in some districts and causing damage in others. In the Punjab some damage was caused by rain and insects but condition at the beginning of September was average to good. In Bihar and Orissa rainfall was mostly general and in some districts heavy.

For the whole of India conditions of the sugar cane crop at the time of planting were favourable and condition and prospects of the crop towards the end of August were on the whole reported to be generally good.

*Egypt* : Growth of the sugar cane crop and formation of internodes are satisfactory owing to favourable weather. Hoeing and manuring of late areas are over. The production of sugar cane in 1932-33, according to the final figure, was 49,818,000 centals (2,491,000 short tons), against 46,903,000 (2,345,000) in 1931-32 and an average of 37,470,000 (1,873,000) during the five seasons ending 1930-31; percentages: 106.2 and 133.0. Crop condition as on 1 September: 100 against 102 last year.

*Madagascar* : The area under sugar cane for production in 1933-34 was a little above that of last season (57,000 acres against 55,000 or 3.3 %) and much larger by 20.6 % than the average of the preceding five years (47,000).

Production of cane is estimated at 4,960,000 centals (248,000 short tons) and that of sugar at 176,000 (9,000) or about the same as last season.

*Mauritius* : Production of cane sugar in the season 1933-34 is estimated to be 4,894,000 centals (244,700 short tons) against 5,450,000 (272,500) in 1932-33 and 4,826,000 (241,300) on the average of the five seasons ending 1931-32. Percentages: 89.8 and 101.4.

*Union of South Africa* : The condition of sugar cane in August showed a slight improvement over the previous month, being 15 % below normal during July. Rainfall was however, still insufficient, but the situation in regard to cane rejections by the mills as a result of the low sucrose content had greatly improved.

# VINES

August was marked by nearly complete drought which began at mid-July in the western Mediterranean basin and spread over most of the viticultural regions of the northern hemisphere.

These weather conditions prevented any invasion of cryptogamic disease and no important attacks of insect pests were reported, with the result that the vines are generally healthy.

## Vines.

COUNTRIES	AREA					CROP CONDITION (†)								
	1933	1932	Average 1927 to 1931	% 1933		I-IX-1933			I-VIII-1933			I-IX-1932		
				1932 = 100	Aver. = 100	a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany. . . . .	206	205	202	100.7	102.1	2.9	—	—	2.9	—	—	2.8	—	—
Austria s) . . . . .	...	70	77	...	...	2.7	—	—	2.6	—	—	2.3	—	—
Bulgaria . . . . .	229	222	208	102.8	110.0	130	—	—	130	—	—	140	—	—
Spain s) . . . . .	3,541	3,526	3,482	100.4	101.7	—	—	—	—	—	—	—	—	—
France. . . . .	4,042	4,006	3,761	100.9	107.5	—	—	—	—	—	—	—	—	—
Luxemburg . . . . .	3	3	3	98.5	90.5	2.9	—	—	—	—	3.3	—	—	3.3
Switzerland . . . . .	33	32	33	103.1	99.5	—	—	55	—	—	62	—	—	85
Czechoslovakia . . . . .	49	47	43	103.5	113.5	—	—	—	—	—	—	—	—	—
Syria and Lebanon . . . . .	118	130	117	90.4	100.8	...	...	...	—	—	80	—	—	90
Algeria . . . . .	929	914	710	101.6	130.8	...	...	...	—	100	—	—	—	—
Tuniz s) . . . . .	99	99	77	100.0	127.7	120	—	—	120	—	—	120	—	—

(†) For the explanation of signs and figures indicating crop condition, see Cereals table and note on page 591. —  
s) Area bearing.

They checked colouring and growth of the grapes, however, in the vineyards of the west Mediterranean basin, particularly in Spain, Portugal and, to a smaller extent, also in the south of France and Italy and in Algeria. Storm rains which fell in places at the end of August and in the first half of September, were rather beneficial, permitting ripening to be completed under good conditions, but in some vineyards where the vintage was in progress, caused considerable though localised damage.

The warm, dry weather was, on the contrary, entirely favourable to the vines in the more northern and eastern regions, in the west, the centre and the east of France, in the north of Italy, and in central and Danubian regions, but the storms of September also caused important damage, especially in Greece.

At mid-September, the crop situation was as follows.

In France and Algeria quality was good, and even very good; quantity was on the whole a good average.

In Italy quality was on the whole good, and quantity considerably smaller than that of last year, even, in general, probably below the average.

In the Iberian Peninsula — Spain and Portugal — results vary greatly with a fairly large deficit compared with the average.

In the Danubian countries, Hungary, Rumania, Bulgaria and Yugoslavia forecasts also vary greatly, as regards both quality and quantity, the latter appearing to be on the whole about average and fairly close to that of last year.,

In Central Europe, Switzerland, Germany, Austria and Czechoslovakia, quantity is frequently not very abundant, but good quality is hoped for.

Lastly, in Greece and in Asia Minor production is partly compromised by drought and storms.

Production this year on the whole promises to be about average and probably below that of last year as regards quantity but much superior nearly everywhere with respect to quality.

Trade activity is reduced and prices show a slight tendency to weaken.

P. d. V.

*Germany* : Owing to the dry, warm August weather, the growth of the vines was further favoured. The crop is quite good. Disease and insect pests are not important. Crop prospects are satisfactory, particularly as regards quality.

*Austria* : At the end of August, the growth of grapes was still backward. The sale of table grapes has begun.

*Spain* : Drought damaged the vines, which had in some regions, also been attacked by cryptogamic disease.

According to the most recent estimate, the production of grapes this year will be about 63.5 million centals against 77.6 million centals in 1932 and 82.0 million centals of the average for the five years ending 1931. Percentages: 82.5 and 77.5. The production of wine will be about 410.6 million Imperial gallons (493.1 million American gallons) against 466.1 million Imperial gallons (560.0 million American gallons) and 496.0 million Imperial gallons (595.5 million American gallons) on the average of the five years ending 1931. Percentages 88.1 and 82.8.

*France* : At the beginning of September vines were in excellent condition. In the South, lack of water was reported at the beginning of the vintage and production was forecast to be below the average. During the first half of September rainfall flooded a large number of rivers in the South and covered large areas of vines about to be harvested, causing great damage.

*Greece* : Heavy rainfall on three consecutive days towards the end of August caused fairly considerable damage to the vineyards, especially in the regions of Pelopounesus, the production centre for dry raisins.

*Hungary* : The cool weather and low night temperatures prevent the normal growth of the fruit. Ripening is proceeding very slowly.

*Italy* : Wine grapes are ripening normally.

*Luxemburg* : Vines in general promise to yield well. Little cryptogamic disease has so far been reported. On about August 10, violent storms, accompanied by hail, damaged part of the vines in several districts of the Moselle area.

*Portugal* : Owing to the weather, crop condition of vines is not good and a poor crop is forecast.



*Rumania* : At the beginning of September, the crop condition of vines was average. At this period wine production was forecast to be larger than that of last year but of less good quality compared with the preceding one.

*Switzerland* : The vineyards promise only a poor crop. The growth of grapes has been rather hindered by drought in certain districts. If the weather remains favourable, wine of good quality may be anticipated.

*United States* : Production of grapes is estimated at 34,440,000 centals (1,722,000 short tons) compared with 44,075,000 (2,204,000) in 1932 and 45,667,000 (2,283,000), the average of 1927-31; percentages: 78.1 and 75.4. Crop condition on 1 September, was 63.7 against 76.7 at the same date of last year. Wine production is estimated at 291,000 Imperial gallons (350,000 American gallons).

*Palestine* : Irrigated vineyards for table grapes have produced fair to good crops, whilst those on the plains and along the foothills are in poor condition, and many old vines have dried up or will dry up before winter. The prospects vary from 30 to 50 % of a normal crop. Wine-grapes are poor everywhere owing to adverse weather conditions. The prospects are from 25 to 50 % of a normal crop. The vintage commenced on August 3.

*French Morocco* : In Savigny, the vintage began in August. In eastern Morocco the great heat injured the growth of the fruit; some plants have been entirely withered. Mists at the end of July gave rise to some cryptogamic disease. The attacks were more serious and where sulphate of copper treatment was carried out in good time, no mildew occurred. In the Taza region, the vintage began earlier than last year. The crop will without doubt be not very abundant owing to *chergui* and storms and hail on August 4. At Fez the vintage was beginning. In the Meknes region, sirocco caused some damage near Bou Felbrane but the crop will be larger than the preceding one owing to the increase of the vineyards. At Rabat the appearance of the vines was good despite sirocco at the beginning of the month. The vintage was beginning. In Choowa the vines had suffered from heat; vines not sulphured in time have been affected by oidium also those too far apart. The Cinsault and Marastel varieties have resisted fairly well. In the Doukhala, the vintage was in progress. The heat obliges the natives to hasten harvesting with a consequent abundance of grapes on the market and low prices. In the Marrakech region the vintage was hastened by sirocco.

*Tunis* : Some vineyards have suffered from cryptogamic disease or have been damaged by hailstorms; the damage is, however, very localised.

## OLIVES

*Spain* : Olives have fruited abundantly but the drought has caused considerable dropping.

*Italy* : Olives in many districts are dropping. Some attacks by fly are reported in certain provinces of Southern and Insular Italy.

*Portugal* : The plants have lost much fruit and olive production is forecast to be poor.

*United States* : Crop condition of olives on September 1 was 38 compared with 70 at the same date of last year.

*Palestine* : The prospects of the olive crop are generally poor.

*Syria and Lebanon* : The total olive area this year is estimated at about 173,000 acres against 191,000 last year and 184,000 on the average for 1927-31; percentages : 90.5 and 93.8 This reduction is probably due to a change in the statistical system of Syria, as the data for the other territories have not changed. Crop condition in August was bad (80) against average (100) last year. In Syria, as in Lebanon, weather conditions after July were unfavourable for olives.

*French Morocco* : The olive crop in August promised to be poor at Taza, Fez, Me-necs and Wezzan. At Marrakesh, violent winds caused dropping of olives. Disease was rather rare but there were some cases of sooty mould of olives at Wezzan.

*Tunis* : Growth of olives is good. Hail storms have caused some damage.

## COTTON

The September estimate published by the Government of the United States forecasts a production of 12,414,000 bales, exceeding the August estimate by 0.8 % or 100,000 bales and not differing greatly from the average of the principal private estimates.

The area to be harvested, 30,036,000 acres, exceeds the August estimate by 1.1 %. The area leased to the Government, on which the crops have been destroyed, is now estimated at 10,396,000 acres, against 10,304,000 in August. The coefficient of abandonment is estimated at 1.2 %, against an average coefficient of 2.6 % forecast in August; it is precisely this large reduction in the coefficient, which brought about the rise in the estimate of area for harvest. The following table summarises these calculations :

	1st estimate 1-VIII-1933	2nd estimate 1-IX-1933
	(thousand acres)	
Area in cultivation on 1 July 1933 . .	40,798	40,798
» leased to the Government . . . .	10,304	10,396
» remaining . . . . .	30,494	30,402
» abandoned . . . . .	790 (2.6 %)	366 (1.2 %)
» for harvest . . . . .	29,704	30,036

Yield is forecast at 197.8 lb. of lint per acre against 198.4 lb. last month and 173.3 lb. in 1932 (final estimate). Crop condition on 1 September, although 9 % below that of 1 August 1933, is 19.2 % above that of 1 September 1932 and 17.0 % above the average of the last ten years. It is the highest figure noted for 1 September with the exception of 1931.

During August a considerable deterioration of crop condition and a corresponding decrease in yield took place in the States east of the Mississippi, due chiefly to the increased activity of boll weevil and adverse weather conditions ;

the States west of the Mississippi on the contrary, especially Texas, show important increases in yields, the weather having been rather more favourable than usual.

*Cotton.*

COUNTRIES	AREA SOWN					CROP CONDITION †)								
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933-34										
				1932/33 = 100	Aver. = 100	I-IX-1933			I-VIII-1933			I-IX-1932		
						Thousand acres								
						a)	b)	c)	a)	b)	c)	a)	b)	c)
Bulgaria . . . . .	79	20	13	401.3	591.8	130	—	—	130	—	—	150	—	—
Greece . . . . .	1) 57	50	44	114.5	130.6	—	—	—	—	—	—	—	—	—
U. S. S. R. . . . .	4,858	5,139	3,249	94.5	149.5	—	—	—	—	—	—	—	—	—
United States . . .	2) 30,036	3) 35,939	3) 40,996	83.6	73.3	67.5	—	—	74.2	—	—	56.6	—	—
Mexico . . . . .	421	188	406	224.5	103.8	—	—	—	—	—	—	—	—	—
China . . . . .	5,945	5,633	4,937	105.5	120.4	—	—	—	—	—	—	—	—	—
India . . . . .	14,031	13,413	15,000	104.6	93.5	—	—	—	—	—	—	—	—	—
Syria and Lebanon	19	20	50	93.9	37.5	...	...	...	—	—	90	—	—	—
Algeria . . . . .	4)	4)	11	52.6	2.3	—	—	—	—	—	—	—	—	80
Egypt . . . . .	1,873	1,135	1,840	165.0	101.8	—	—	—	—	—	—	—	—	—
Eritrea . . . . .	12	5	1	250.0	195.3	—	—	—	—	—	—	—	—	—

†) For the explanation of signs and figures indicating crop condition, see Cereals table and note on page 591. —  
1) Unofficial calculated data. — 2) Acreage estimate as on 1 September. — 3) Acreage picked. — 4) Area under 500 acres.

The American market is active, and quotations are subject to oscillations, sometimes sharp. The situation of the grain markets and stock exchanges, the dollar-sterling exchange, the activity of the cotton industry in Europe, news from the cotton belt, the Government program to control future cotton seasons, the industrial situation, rumours of large credit sales by the Government of the United States to certain foreign Governments, proposals to limit ginnings or balings in order to reduce the supply, have at certain moments some influence. The statistical situation is better than in September 1932; but the supply is very large compared with the demand and permits the forecast for the season 1933-34 of an increase in competition between American cotton and other cottons.

In Egypt picking is in full swing and production is in general satisfactory, especially in Upper-Egypt. Cotton leaf worm has caused appreciable damage to most of the *Sakellaridis* crops north of the Delta, but after an energetic campaign which was finished at the end of August, all of the crops are at present free of this insect. On the whole, despite adverse weather conditions for very frequent and continued periods, damage by insects this year is not abnormal and production is apparently good and abundant. The measures frequently adopted, moreover, by the Government and agricultural credit institutions to assist farmers, have permitted the latter to improve cultivation. Further, the Government at present takes a large interest in the American cotton situation and a member of the Government is at present in the United States to study on the spot the measures of the American Government to raise prices and maintain

them at a remunerative level. Private estimates of production vary between 1,660,000 and 1,706,000 bales ; the first official estimate will be issued on Monday, 2 October (1). Arrivals at Alexandria are larger than last year but smaller than those of 1931, whereas exports are still about the same as last year ; Government stocks are practically exhausted. The market is dominated by fluctuations in American quotations and the dollar-sterling exchange ; the appreciation of sterling relative to the dollar has contributed on some days to lower prices and diminish the margin between Egyptian " Uppers " and American " Middling ".

It is still too early to obtain an idea of production in India ; the prevailing opinion is, however, that it will be abundant, exceeding that of the preceding year, an occurrence not recorded for several years past. The market remains not very active and prices are low partly also as a result of the Japanese boycott in retaliation against the Indian customs tariff, which has hindered the entry of Japanese goods. Negotiations are at present in progress between Great Britain, Japan and India for the diminution of competition, which has become extremely severe. It should be borne in mind that Japan is by far the largest purchaser of Indian cotton.

The cotton area in China is estimated this year 5.5% larger than that of last year and production is forecast at about three million bales or nearly 33% more than last year. This figure is, however, a preliminary one referring to the situation in July and it is anticipated that later estimates will be rather lower.

Brazil and Mexico forecast large productions in contrast to the deficient ones of last year, but about equal to the average.

News from the U. S. S. R. does not seem to be favourable. Lack of statistical data at present prevents, however, the formation of an estimate.

Bulgaria and Greece report good progress, whereas Turkey and Syria note regressions, Algeria has nearly completely abandoned cotton production and the Union of South Africa is also, it seems, gradually giving up production.

It is, on the whole, probable that world production in 1933-34 will exceed that of 1932-33.

I. S.

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*United States* : The cotton crop made satisfactory progress in the last week of August. Some storm damage occurred in the extreme northeastern portion of the belt and parts of the East Gulf area were too dry. Moisture favoured weevil activity in parts of the northwestern belt. Progress was good in Texas. In the first week of September conditions were scarcely favourable owing to frequent showers and cloudy weather. Progress was fair to good in Texas and mostly satisfactory in Oklahoma though weevil activity was reported in both States. In Oklahoma picking made slow progress. In the Central States considerable shedding was reported locally ; picking was becoming general. Progress was mostly satisfactory in the Eastern States. In the second week of September temperatures favoured cotton. The cotton crop is making good progress. Picking is proceeding and prospects were good on September 21. The quantity of cotton, not including linters, ginned from the 1933 crop to close of business on 15 August was 460,000 running bales (counting round bales as half-bales), against 251,000 in 1932, 91,000 in 1931, 573,000 in 1930, 305,000 in 1929 and

(1) See Latest News on page 636.

280,000 in 1928. To close of business on 31 August : 1,394,000 against 865,000 in 1932, 566,000 in 1931, 1,880,000 in 1930, 1,568,000 in 1929 and 957,000 in 1928.

According to the Government September estimate, production of ginned cotton in the present season is estimated at 59,339,000 centals (12,414,000 bales) compared with 62,147,000 (13,002,000) actually obtained in 1932-33 and 70,061,000 (14,657,000), the average for the five seasons 1926-27 to 1930-31. Percentages : 95.5 and 84.7. The August estimate was 58,861,000 centals (12,314,000 bales).

*Mexico* : Production of lint is estimated to be 1,068,000 centals (223,400 bales) in 1933-34 against 453,300 (94,800) in 1932-33 and 1,043,400 (218,300) on the average of the five years ending 1931-32. Percentages : 235.6 and 102.4.

*India* : Heavy rains fell in parts of Bombay Presidency, causing some damage in Gujerat and the North Deccan. On September 9 crops were mostly doing well. In the Central Provinces the weather was mostly cloudy and wet ; slight damage was reported to insects in one district. In the Punjab some damage was caused by rain and insects but condition at the beginning of September was average to good. According to a telegram of September 18 crop condition of cotton in the Punjab was 96 % of the normal. Moderate to heavy rains fell in Madras during August. Condition of standing crops on September 2 was fair except in some flooded sections east of the Godavari. For all India, weather conditions of the cotton crop at sowing time were not quite favourable and the present condition of the crop towards the end of August was on the whole, reported to be fairly good.

*Egypt* : The weather during August was moderate during the day and wet at night but in general favourable for the ripening of cotton. In lower Egypt, picking is about two weeks in delay and the aspect of the plants, except in the north of the Delta, is in general satisfactory. In Middle and Lower Egypt picking had begun towards the end of August, in slight delay and the aspect of the plants is better than last year (1).

*Uganda* : With the exception of Gulu District, weather conditions in July were abnormal and very unfavourable for *clearing* and planting. In spite of these adverse conditions the acreages planted may be called satisfactory, although not nearly up to those of last season. Considerable resowing will be necessary and as the crop will be a late one expectation at this stage is that the yield will not be more than average.

*Tanganyika* : The amount of lint and cottonseed available for sale on 1st July 1933 were estimated at 87,600 and 112,800 centals (18,300 bales and 5,600 short tons) respectively.

*Union of South Africa* : Production of cotton lint in 1932-33 is estimated at 10,570 centals (2,211 bales) against 13,300 (2,782) in 1931-32 and 43,383 (9,076) on the average for the preceding five seasons ; percentages : 79.5 and 24.4.

## FLAX

*Austria* : At the end of August, production of flax was nearly finished. The stalks are long and of fairly good quality.

*Great Britain and Northern Ireland* : The weather during August in Northern Ireland was considerably below the average of the past eleven years. Temperatures

(1) See Latest News on page 636.

generally very high; at the end of the month the greater part of the flax crop had been stocked or was in stock after *steeping*. Crops generally are good and satisfactory yields of fibre are anticipated.

*Hungary*: Flax stalks are rather short. Production of linseed is good.

*Argentina* (Telegram of September 19): Flax is in fair condition.

### Flax.

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver.							1932	Aver.
1,000 acres			= 100	= 100	1,000 centals			1,000 pounds			= 100	= 100	

### Fibre.

Germany . . . . .	12	11	30	108.1	40.2	—	—	—	—	—	—	—	—
Austria †) . . . . .	4	8	10	53.9	41.9	63	106	138	6,261	10,582	13,814	59.2	45.3
Belgium . . . . .	27	21	54	128.7	49.3	191	151	439	19,113	15,078	43,874	126.8	43.6
Bulgaria . . . . .	1	1	1	148.5	167.6	4	2	2	419	163	191	256.8	219.7
Estonia . . . . .	40	36	75	109.1	52.6	90	84	194	9,039	8,449	19,352	107.0	46.7
Finland 1) . . . . .	10	10	10	10.3	97.1	...	33	28	...	3,282	2,769	...	...
France . . . . .	28	23	71	124.0	39.7	...	121	518	...	12,100	51,840	...	...
Hungary . . . . .	19	16	22	120.7	87.0	...	51	85	...	5,136	8,532	...	...
Latvia . . . . .	103	78	139	130.9	73.8	283	208	385	28,271	20,812	38,524	135.8	73.4
Lithuania . . . . .	135	106 1)	200	128.1	—	...	314	671	...	31,442	67,135	...	...
Netherlands . . . . .	12	5	33	235.7	34.9	75	31	225	7,496	3,086	22,503	242.9	33.3
Poland . . . . .	...	231	279	...	...	...	564	1,127	...	56,431	112,745	...	...
Czechoslovakia . . . . .	18	16	40	109.8	44.4	...	72	175	...	7,243	17,482	...	...
U. S. S. R. 3) . . . . .	5,288	6,202	4,006	85.3	132.0	—	—	—	—	—	—	—	—

### Linseed.

									Thousand bushels of 56 pounds					
Austria . . . . .	3	5	6	54.2	40.9	9	20	23	17	36	41	45.7	40.1	
Belgium . . . . .	27	21	54	128.7	49.3	143	113	263	256	202	470	126.5	54.5	
Bulgaria . . . . .	1	1	1	148.5	167.6	6	6	4	11	11	7	97.1	159.3	
Italy . . . . .	20	22	32	90.2	61.1	...	54	54	...	96	96	...	...	
Latvia . . . . .	103	78	139	130.9	73.8	247	197	359	441	352	640	125.3	68.9	
Canada . . . . .	243	454	489	53.6	49.7	423	1,370	2,026	756	2,446	3,619	30.9	20.9	
United States . .	1,755	2,081	2,915	84.3	60.2	3,925	6,601	10,452	7,009	11,787	18,664	59.5	37.6	
India . . . . .	3,239	3,301	3,123	98.1	103.7	9,027	9,318	8,221	16,120	16,640	14,680	96.9	109.8	
Erytrea . . . . .	4	2	—	150.0	—	20	17	—	35	30	—	119.2	—	
Argentina . . . .	4) 6,919	4) 7,401	4) 7,448	93.5	92.9	...	29,291	42,388	...	52,305	75,694	...	...	

†) Production expressed in terms of air-dried stalks. — 1) Flax and hemp. — 2) Area sown to 1 June. — 3) "Dolgumetz" variety. — 4) Area sown.

## HEMP

*Germany* : The area cultivated to hemp and to other textile plants (flax not included) this year will be about 520 acres against 800 in 1932 and 1,480 on the average for the five years ending 1931. Percentages 65.9 and 35.3

*Austria* : Hemp production is estimated as follows. Dry stalks: 14,600 centals against 16,300 in 1932 and 17,700 on the average for 1927-31. Seed : 1,100 centals against 1,500 in 1932 and 2,100 on the average for 1927-31.

*Hungary* : The area under hemp in 1933 is estimated at 21,040 acres as against 16,540 in 1932 and 20,060, the average for 1927 to 1931. Percentages : 127.2 and 104.9. Production of hemp fibre is reported to be average.

*Syria and Lebanon* : The area sown to hemp is this year 2,400 acres only, as against 6,700 last year and the average for 1927-31 of 6,400 acres ; percentages : 35.6 and 37.0.

## HOPS

*Germany* : The area cultivated to hops this year will be about 23,600 acres against 19,900 in 1932 and 34,200 on the average of the five years ending 1931. Percentages : 118.8 and 68.7.

*Belgium* : Conditions of growth of hops are generally good. Production was forecast at 17,600 centals or 15.2 % above that of 1932 (15,300) but 53.8 % below the average of the preceding quinquennium. The area harvested was 1,650 acres or 116.4 % of that of 1932 and 54.4 % of the average.

*Great Britain and N. Ireland* : Picking of hops was general in England and Wales at the end of August and an average yield of good quality over the whole hop growing area is anticipated. With the exception of Red Spider, which has appeared in many gardens, disease is not prevalent.

*Hungary* : The area under hops this year was 358 acres compared with 242 last year and 539 on the average for the period (1927-31). At mid-September, production was forecast to be average.

*Czechoslovakia* : The hop area in 1933 was 27,000 acres against 24,000 last year and 38,000 on the average for the preceding quinquennium : Percentages : 112.4 and 69.2. Picking began during the last week of August. The quality of hops is very good ; yield per acre is, however, lower than in normal years.

## TOBACCO

*Germany* : The production of tobacco during the season 1932-33 (July, 1, 1932 to June, 30, 1933) will be about 62.2 million pounds against 51.1 during 1931-32 and 45.0 on the average for the preceding five seasons. Percentages : 121.8 and 138.2.

*Belgium* : Growth of tobacco is generally good. The first estimate of tobacco production this year is 137,300 centals against 136,900 in 1932 and 152,900 on the average for the preceding quinquennium : percentages : 100.3 and 89.8 ; this production was obtained from an area of 6,700 acres or about equal to that of 1932 and 9.3 % below the average.

*Greece* : According to a private but competent estimate the area cultivated to tobacco this year should exceed by 33,000 acres that of the last year (157,000), and should therefore be 190,000 acres. This area would exceed by 21 % that of last year, but would remain 18 % below the 1927-31 average.

*Hungary* : The area under tobacco this year was 44,000 acres against 61,000 in 1932 and 58,000 on the average for the quinquennium 1927-1931. At mid-September, harvesting of tobacco leaves was in progress. The leaves are generally small but of good quality.

*Czechoslovakia* : The area this year is 24,100 acres, with a decrease of 2.5 % on last year and an increase of 42.6 % on the average of the preceding quinquennium. In Slovakia, which is the principal centre for this crop, tobacco has suffered from drought.

*United States* : Tobacco production is estimated, at 1,362,000,000 lb. against 1,015,512,000 in 1932 and 1,474,688,000 on the average for 1927-31; percentages: 134.1 and 92.4.

*Japan* : According to the most recent estimate production of tobacco this year will be about 133,623,000 pounds against 138,230,000 in 1932 and 145,584,000 on the average of the five years ending 1931. Percentages 96.7 and 91.8.

*Palestine* : Crop condition of tobacco at the beginning of August was poor.

*Turkey* : Conditions of growth of tobacco are in general most satisfactory. Production of this crop is forecast to be very abundant in the provinces of Trébizonde and Boursa.

*Tanganyika* : The amount of tobacco available for sale on 1 July 1933 was estimated at 4,100 cents.

## OTHER PRODUCTS

### Cacao.

*Brazil* : Entries for the month of August were satisfactory, though showing a considerable reduction on those for the corresponding month of last year, which were much above the average.

Entries by rail :	August		May to August	
	1933	1932	1933	1932
	ooo lb.			
Ilheos Zone . . . . .	11,475	16,667	28,156	29,114
Rio da Contas Zone . . . . .	1,488	1,852	4,351	3,968
Total . . .	12,963	18,519	32,507	33,082

Prospects for the main crop are reported to be normal though it is not expected that the crop will be so large as that of 1932-33. Weather was wet during the earlier part of the month. Rainfall at Ilheos was 120.65 mm. (4.75 inches) against the average of 127.51 mm. (5.02 inches).

*Gold Coast* : July was a wet month, the cloudy and rainy weather adversely affecting the curing and quality of the beans. By the end of the month practically the whole of the minor crop had ripened. In the Saltpond area the crop was a little later and



was expected to end in August. 95 % of the crop had been picked by farmers and about 80 %, or 30,200,000 lb., marketed by 31 July. Of this figure Ashanti contributed some 1,700,000 lb., a larger amount than usual. Movement of the minor crop slowed up during the month of July although the price offered continued to attract sellers. On the contrary, rail movement of major crop was particularly heavy in comparison with the same month in previous years. Exports for July were 35,390,000 lb., making the total shipped from 1 October to 31 July 492,460,000 lb. Heavy exports for August were expected. Stocks of main crop were further reduced and were about 59,400,000 lb. on 1 August. The amount of cacao exported from British Togoland via the Eastern Frontier was 12,200,000 lb. from 1 October to 30 June. Estimates of production supplied by Divisional and District Officers are provisionally as follows: Eastern Province and Trans-Volta Area 198,000,000 lb., Ashanti 170,000,000 lb., Central Province 110,000,000 lb., Western Province 29,000,000 lb., British Togoland 21,000,000 lb.

Flowering of the 1933-34 major crop had finished in some localities at the beginning of August. In the Sekondi-Dixcove area more flowers were expected and the inference is that the crop will end late. The wet weather has caused the incidence of pod disease to be rather higher than usual. In general, the crop will commence later than last year and will be prolonged into January and February of 1934. The distribution of the crop over the ensuing months will be largely affected by the weather experienced during August and September.

### Tea.

*India*: According to an official report of August 24, the weather in North India was generally seasonable during the first half of July but latterly in most districts it was unusually hot and dry. Crop prospects were fair. Statistics to the end of July recorded a decrease of over 13  $\frac{3}{4}$  million lb. as compared with the outturn to the same date of last year. In South India heavy monsoon conditions prevailed and immediate crop prospects were poor. The outturn was 3.39 % behind that to the same date of last year.

### Coffee.

*Dutch Guiana*: Crop condition of coffee is good owing to rainfall in the second quarter.

*Kenya*: The returns made to the Department of Agriculture give the estimated coffee crop for 1933-34 as 270,000 centals, a decrease of 26 % in respect of last year's crop (356,000 centals) and an increase of 10 % on the average for the preceding quinquennium (241,000 centals); but the Department states that it is certain that the great proportion of this will be lights and other inferior qualities due to severe drought, and will not reach the London market. The above estimate is likely to be substantially reduced in later reports.

*Madagascar*: About 173,000 acres have been planted to coffee for the season 1933-1934, whereas last year's area was 165,000 and the five-year average 156,000 acres (104.6 % and 110.6 %). Probable production is estimated at 331,000 centals, which is considerably below that of last year (372,000) by 11%, but greatly above the five-year average of 135,000 (+ 145.3 %), as the plantations have only recently reached their full extent.

*Tanganyika*: The amount of coffee available for sale on 1 July 1933 was estimated at 246,000 centals.

### **Colza, Sesame and Mustard.**

*Germany*: The area cultivated to colza and rapeseed this year will be about 12,700 acres against 14,900 in 1932 and 41,100 on the average of the five years ending 1931. Percentages 85.7 and 31.0.

*Greece*: According to the unofficial estimate, the area cultivated to sesame this year should exceed by 20,000 acres that of last year (74,000 acres) and should therefore be 94,000 acres. Percentages in relation to 1932 and to the average of 1927-31: 127 and 168.

*Hungary*: Winter colza sowings have been nearly finished; germination of the early sowings has been satisfactory and that of late ones poor.

*Netherlands*: Crop condition of colza by the Dutch system was 67 on August 16 against 70 on July 13, 1933. On this basis, production of colza, which was estimated in the previous month at 72,000 centals (144,000 bushels), should be proportionally reduced. Crop condition of mustard was 68 against 71 respectively.

*Rumania*: Towards mid-September, sowing of winter colza continued under favourable conditions.

*Palestine*: On the very small areas under sesame the yields will be extremely low, owing to complete failure in most areas.

*Czechoslovakia*: The area cultivated to rapeseed this year is 2,400 acres, showing a decrease of 36.8 % compared with last year and a decrease of 43.2 % compared with the average of the preceding quinquennium. Production is estimated at 24,000 centals (48,000 bushels) against 38,600 (77,000) in 1932 and 42,000 (83,000) on the average for the preceding quinquennium; percentages: 62.5 % and 57.9 %.

*Syria and Lebanon*: The area sown to sesame is this year 2,200 acres only, compared with 5,800 last year and the average for 1927-31 of 14,200 acres; percentages: 38.1 and 15.7.

*Tanganyika*: The amount of sesame available for sale on 1 July 1933 was estimated at 110,000 centals (5,500 sh. tons).

### **Groundnuts.**

*Egypt*: The growth in early and general groundnut crops which were not attacked by the cotton worm is satisfactory. The early cultivations are in the stage of pod formation. Crop condition on 1 September: 98 against 100 in 1932. Production of 1932 is estimated at 513,000 centals, compared with an average for 1927-31 of 305,000 centals.

*Tanganyika*: The amount of groundnuts available for sale on 1 July 1933 was estimated at 413,700 centals.

### **Jute.**

*India*: Harvesting, steeping and washing of jute were progressing in August Bengal and Bihar and Orissa. This year's jute area was 2,491,000 acres compared with 2,143,000 last year and 3,057,000 on the average for 1927-31. Percentages: 116.2 and 81.5. Production amounted to 31,732,000 centals against 28,388,000 in 1932 and 37,920,000 the average for 1927 to 1931. Percentages: 111.8 and 83.7.

## Sericulture.

*Italy* : Production of mulberry leaves this year will be about 2,585,581,000 pounds against 2,828,573,000 in 1932 and 3,194,393,000 on the average for the five years ending 1931. Percentages : 91.4 and 80.9.

*Japan* : Production of spring cocoons according to the most recent estimate, this year will be 414,215,000 lbs. against 383,535,000 in 1932 and 421,892,000 on the average for the five years ending in 1931. Percentages 108.0 and 98.2. The quantity of eggs incubated, for summer-autumn production, was 3,459,000 ounces against 3,136,000 in 1932 and 3,481,000 on the average. Percentages : 110.3 and 99.4.

*Syria and Lebanon* : The quantity of silkworm eggs incubated this year is 52,000 ounces against 61,000 last year and a 1927-31 average of 97,000. Percentages : 84.7 and 53.1. Production of fresh cocoons is estimated at 4,409,000 lb. as against 4,880,000 last year and an average of 7,265,000. Percentages : 90.3 and 60.7.

## FODDER CROPS

*Germany* : Fodder plants and meadows have been injured by drought. Isolated storm rains towards the end of the month have somewhat repaired previous damage. Yields of aftermath on dry lands are insufficient.

In the following table are given the figures of areas cultivated to the principal fodder crops compared with the figures for the preceding year and the average of 1927-31 :

Crops	1933	1932	Average 1927 to 1931	% 1933	% 1933
				1932 = 100	Average = 100
	(thousand acres)				
Clover . . . . .	4,299	4,320	4,386	99.5	98.0
Turnips . . . . .	671	671	642	99.9	104.5
Mangolds . . . . .	2,042	2,013	1,816	101.4	112.5
Alfalfa . . . . .	778	778	722	100.0	107.8
Irrigated meadows . . . . .	1,016	1,007	989	100.9	102.7
Other meadows . . . . .	12,564	12,587	12,626	99.8	99.5
Pastures . . . . .	6,558	6,569	6,391	99.8	102.6

*Austria* : Weather conditions in August were very favourable to fodder crops In the following table are given the partial results of production of the principal fodder crops.

Crops	1933		1932				Average 1927-31
	1st cutting	2nd cutting	1st cutting	2nd cutting	3rd cutting	Total	Total
(ooo centsals)							
Red clover (hay) . . . . .	8,157	5,137	5,225	4,167	3,131	12,523	15,785
Alfalfa (hay) . . . . .	2,205	1,720	1,720	1,433	1,036	4,189	3,860
Mixed clover (Klee gras, hay) . . . . .	2,359	1,984	2,161	2,183	1,742	6,086	5,293
Permanent meadows giving one or more cuttings (hay) . . . . .	55,777	...	59,635	9,590	1,764	70,989	71,684
(ooo sh. tons)							
Red clover (hay) . . . . .	408	257	261	208	157	626	789
Alfalfa (hay) . . . . .	110	86	86	72	52	210	193
Mixed clover (Klee gras, hay) . . . . .	118	99	108	109	87	304	265
Permanent meadows giving one or more cuttings (hay) . . . . .	2,789	...	2,982	480	88	3,550	3,584

*Estonia* : According to an estimate of agricultural correspondents, hay production will be considerably below that of last year, particularly for temporary meadows.

*Irish Free State* : The warm spell during August was rather severe on pastures, but some showers at the end of the month relieved the situation and grass was growing satisfactorily when the month closed.

*Finland* : Below are given the corrected figures of production in 1933 of some of the principal fodder crops :—

		1933	1932	Average 1927 to 1931	% 1933 1932 = 100	% 1933 Average = 100
Temporary meadows						
(hay) . . . . .	(000 cents)	57,746	65,963	56,531	87.5	102.1
	(000 sh. tons)	2,887	3,298	2,826		
Permanent meadows						
(hay) . . . . .	(000 cents)	5,805	8,984	9,870	64.6	58.8
	(000 sh. tons)	290	449	493		
Turnips . . . . .	(000 cents)	7,518	11,861	12,188	63.4	61.7
	(000 sh. tons)	376	593	609		
Fodder roots and tu-						
bbers. . . . .	(000 cents)	10,282	15,269	13,581	67.3	75.7
	(000 sh. tons)	514	763	679		

*France* : Fodder maize is rather irregular. Grass in the Centre and Southwest and in other regions also, which was dried up, benefited by recent rains. Aftermath seemed poor and often deficient.

*Great Britain and Northern Ireland* : Generally the mangel crop made good progress during August in Northern Ireland. In most cases the roots are smaller than usual at this season owing to the dry conditions of the soil but the crop is growing out well. With regard to turnips it would appear that while there are a considerable number of good crops, the average yield is not likely to be as heavy as in 1932. Many fields had to be resown and where this was necessary the crop is still backward. With the exception of a few fields in late districts, the saving of hay was completed during the month. The harvesting of hay was carried out under very favourable conditions generally and the quality is good. It is expected that the yield of the crop as a whole will be of at least average dimensions.

In Scotland the weather was dry during August ; turnips and swedes made little progress and the fields were patchy but in most parts of the country the roots bulbed fairly well. The crop is healthy. Weeds appeared, however, to have grown more freely than usual. Ample supplies are available for present requirements. During the latter part of the month, the price of some descriptions of concentrated foods showed a lower tendency. Hay is plentiful generally and of very good quality. A rather light crop of rye-grass and clover was anticipated. Pastures were good in the west but in eastern districts required rain ; condition of mangolds was good that of turnips and swedes was partly good but mainly fair (95).

August weather in England and Wales was mostly hot and dry. The hay harvest was finished early in the month and while the total production will be below that of last year, the quality and condition are good. Second cuts are light and are not generally being taken. Pastures are mostly bare with little aftermath. Yield of clover and rotation grasses was about 24.6 cwt. per acre and that of permanent grass 17.7 cwt. per acre. Dry weather has retarded the growth of root crops over most of the country ; mangolds have suffered less than other roots from the drought and it is anticipated

*The Condition of Fodder Crops.*

CROPS AND COUNTRIES	CROP CONDITION †)								
	1 September 1933			1 August 1933			1 September 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
<b>CLOVER:</b>									
Germany . . . . .	2.8	—	—	2.6	—	—	2.8	—	—
Austria 1) . . . . .	2.2	—	—	2.1	—	—	2.8	—	—
Scotland . . . . .	—	—	95	—	—	—	—	—	95
Lithuania . . . . .	103	—	—	—	—	—	123	—	—
Netherlands:									
red clover . . . . .	2) 63	—	—	—	2) 65	—	—	—	2) 67
white clover . . . . .	2) 63	—	—	—	—	2) 65	—	—	—
<b>ALFALFA:</b>									
Germany . . . . .	2.9	—	—	2.7	—	—	2.7	—	—
Austria . . . . .	2.2	—	—	1.9	—	—	2.8	—	—
<b>MANGOLDS:</b>									
Germany . . . . .	2.7	—	—	2.5	—	—	2.6	—	—
Austria . . . . .	2.2	—	—	2.1	—	—	2.7	—	—
Denmark . . . . .	—	—	90	—	—	98	101	—	—
Scotland . . . . .	—	100	—	—	100	—	—	—	95
Finland 3) . . . . .	—	—	75	—	—	60	—	—	94
Lithuania . . . . .	106	—	—	106	—	—	120	—	—
Norway . . . . .	—	—	72	—	—	82	—	—	—
Netherlands . . . . .	2) 71	—	—	2) 71	—	—	2) 74	—	—
Switzerland . . . . .	—	—	98	—	100	—	—	—	97
Canada 3) . . . . .	—	—	79	—	—	80	—	—	95
<b>TEMPORARY MEADOWS:</b>									
Austria 4) . . . . .	2.1	—	—	2.1	—	—	—	—	3.1
Finland . . . . .	—	—	90	—	—	82	—	—	—
Norway . . . . .	—	—	79	—	—	80	—	—	95
Sweden . . . . .	—	—	2.7	—	—	—	3.4	—	—
Switzerland . . . . .	3.9	—	—	4.2	—	—	3.9	—	—
<b>PERMANENT MEADOWS:</b>									
Germany:									
irrigated meadows . . . . .	2.7	—	—	2.6	—	—	2.5	—	—
other meadows . . . . .	—	3.0	—	2.8	—	—	2.8	—	—
Austria . . . . .	2.2	—	—	2.1	—	—	—	—	3.1
Finland . . . . .	—	—	81	—	—	75	—	100	—
Lithuania . . . . .	—	—	90	—	—	—	110	—	—
Norway . . . . .	—	—	74	—	—	71	—	—	—
Sweden 5) . . . . .	—	—	2.5	—	—	—	—	—	2.9
Switzerland . . . . .	2.3	—	—	4.1	—	—	4.1	—	—
<b>PASTURES:</b>									
Austria . . . . .	2.3	—	—	2.5	—	—	—	—	3.3
Denmark . . . . .	—	—	82	—	—	85	—	—	82
Scotland . . . . .	—	—	95	—	—	90	—	100	—
Netherlands . . . . .	—	—	2) 65	2) 65	—	—	2) 75	—	—
Switzerland . . . . .	3.6	—	—	3.9	—	—	3.7	—	—
Canada . . . . .	—	—	73	—	—	77	—	—	92

†) See explanation of the various systems on page 591. — a) Above the average. — b) Average. — c) Below the average. —  
 1) Red clover. — 2) At the middle of the preceding month. — 3) Turnips. — 4) Klee gras. — 5) Meadows for hay.

that the yield will be only slightly below the average. Unless sufficient rain falls soon turnips and swedes will be considerably below average as regards yield. Conditions favour cleaning the land.

*Hungary* : At mid-September, fodder needed rain and warmth. The third cutting of clover has given a poor yield and the fourth, of alfalfa, a yield a little below the average. The new clover sowings have germinated well but need moisture. Production of the other temporary fodder crops has been generally average. Production of aftermath from permanent meadows has been rather poor. Growth of pastures has suffered from the drought and livestock find feed only in the lower areas.

*Italy* : The autumn-winter sowings have begun and cutting of meadows is in progress, the growth of which appears to be greatly reduced.

*Latvia* : According to a report of agricultural correspondents, the quality of clover was good in 82.8 % of the replies, average in 16.4 % and bad in 0.8 %. The corresponding figures for hay were 78.1 %, 21.0 % and 0.9 %.

*Lithuania* : The weather was in general normal. There were only a few cases of dry weather during the first half of August which were injurious to permanent meadows. Area of pastures is estimated, in 1933, at about 1,230,000 acres.

*Netherlands* : Growth of the grass was retarded by drought with the result that second cuttings gave yields below those of last year. Subsequent rainfall, however, improved the situation. Red clover and mangolds are fairly satisfactory.

*Switzerland* : The fine spell in August permitted harvesting to be affected under good conditions; production was excellent. Aftermaths were also obtained rapidly and production may be considered excellent as regards both quantity and quality. Mountain cuttings, in particular, have benefited by the very advantageous weather conditions. Growth has, however, left something to be desired after harvesting of aftermaths, particularly on dry lands. This is the reason for the less favourable aspect of permanent and temporary meadows compared with the preceding month. The drought has also to some extent compromised the growth of alpine grass.

*Czechoslovakia* : The prolonged drought which lasted from mid-July to mid-August, was unfavourable to fodder crops. Rainfall in the latter half of August, although beneficial, was insufficient to compensate for the effects of the drought. Clover production is considered to be deficient.

*Argentina* : (Telegram of 19 September) : Crop condition has improved rapidly owing to general rains in the first half of September.

*Canada* : Crop condition of fodder maize on September 1, 1933 was 81 % of the long time average yield, as in the preceding month, compared with 94 % on September 1, 1932.

*United States* : The latest estimates of fodder production are as follows :

	1933	1932	Average 1927-31	% 1933 1932 = 100	Av. 1933 = 100
Tame hay (000 centsals) . . . . .	1,305,800	1,395,880	1,443,872	93.5	90.4
(000 sh. tons) . . . . .	65,290	69,794	72,194		
Alfalfa (000 centsals) . . . . .	484,600	519,300	472,180	93.3	102.6
(000 sh. tons) . . . . .	24,230	25,965	23,609		
Clover, etc. (000 centsals) . . . . .	494,760	519,820	675,172	95.2	73.3
(000 sh. tons) . . . . .	24,738	25,991	33,759		
Wild hay (000 centsals) . . . . .	182,440	243,740	227,900	74.9	81.0
(000 sh. tons) . . . . .	9,122	12,187	11,395		

*Union of South Africa*: Although droughty conditions were unrelieved over the greater part of the Union during July, exceptionally heavy rains fell over the southwestern districts of the Cape Province and along the West Coast districts. Grazing is improving in the previously drought stricken districts of the West Coast but growth is being retarded by the cold. Conditions in the inland areas of the Northwest, however, show no improvement. Beneficial rains fell in Natal and Southern Transvaal.

## LIVESTOCK AND DERIVATIVES

### Livestock in the Irish Free State.

The statistics in the following table refer to the situation at 1 June of each year; for the years 1923 and 1924 the estimates had to be made from sample returns. The estimates for 1933 have been made by applying to the known figures for 1932 percentage changes calculated from the changes in 654 District Electoral Divisions, out of the total of 2,990, for which specially early figures were obtained.

YEAR	THOUSAND HEAD							
	Cattle				Pigs		Sheep	Poultry
	Total	Milch Cows	Other Cattle, under one year	Other Cattle one year old and under two	Total	Sows		
1933 . . . . .	4,174	1,274	1,015	903	901	96	3,416	23,037
1932 . . . . .	4,025	1,230	1,016	861	1,108	109	3,461	22,536
1931 . . . . .	4,028	1,222	995	856	1,227	125	3,575	22,782
1930 . . . . .	4,038	1,225	938	875	1,052	111	3,515	22,900
1929 . . . . .	4,137	1,227	1,010	875	945	96	3,375	22,089
1928 . . . . .	4,125	1,231	1,008	879	1,183	115	3,264	21,714
1927 . . . . .	4,047	1,234	1,001	780	1,178	124	3,120	21,584
1926 . . . . .	3,947	1,184	927	747	884	93	3,003	21,367
1925 . . . . .	3,991	1,183	919	771	731	75	2,813	17,279
1924 . . . . .	4,268	1,261	988	834	987	95	2,726	16,982
1923 . . . . .	4,278	1,269	972	857	1,186	124	2,666	17,278

The total number of cattle showed an increase of 3.7 % on that of 1932, reaching the highest figure noted since the year 1924. All kinds showed increases except cattle under 1 year old which decreased by 0.1 %.

The total number of pigs showed a sharp fall of 18.7 % the decreases being 11.6 % for sows and 19.5 % for other pigs. The total number was the lowest recorded since 1926.

Sheep decreased by 1.3 % compared with 1932, but are still more numerous than in 1929.

Poultry showed an increase of 2.2 %, reaching the highest level for the decade.

### Livestock in Finland.

In the following table are given the numbers of livestock in Finland during the last ten years.

Classification	1932	1931	1930	1929	1928
Horses . . . . .	360,278	361,640	356,650	357,886	393,746
Cattle . . . . .	1,806,075	1,821,052	1,810,030	1,744,470	1,916,010
Sheep . . . . .	964,593	920,141	923,999	956,816	1,319,070
Goats . . . . .	10,872	11,113	10,381	10,989	10,592
Pigs . . . . .	414,369	445,693	394,554	380,088	434,838

Classification	1927	1926	1925	1924	1923
Horses . . . . .	395,968	390,998	401,664	402,963	400,239
Cattle . . . . .	1,871,865	1,860,479	1,870,603	1,864,469	1,864,645
Sheep . . . . .	1,368,173	1,413,697	1,451,084	1,484,529	1,549,994
Goats . . . . .	11,021	11,076	11,767	11,709	11,577
Pigs . . . . .	417,723	390,536	378,383	375,681	381,715

The number of horses has constantly decreased during the last ten years. The year 1931 showed a slight recovery which did not, however, last long and the number of horses in 1932 was 10 % below that of 1923.

The number of cattle remained at a fairly stable level from 1923 to 1928, the year during which a fairly large increase took place, followed in the subsequent year by a considerable decrease. The number of cattle in 1932 was still 3.1 % below that of 1923.

Sheep have decreased continually during the last ten years and in 1932 when there was, however, a slight improvement, the number of sheep represented only 62.2 % of that of 1923.

The number of pigs, which has increased uninterruptedly since 1925, reached a high figure in 1928 then decreased sharply in 1929 – a phenomenon similar to that noted in the case of cattle – and then recovered strongly in 1931.

The year 1932, although showing a regression of 7 % compared with the record figure of 1931, was marked by an increase in the number of pigs exceeding that of 1923 by 8.6 %.

### Livestock in England and Wales.

The rate of decrease in the number of horses again diminished in 1933 ; the decrease compared with 1932 was 1.6 % as against 2 % last year compared with 1931. Horses used for agricultural purposes, constituting the larger part of the item, decreased by 1.5 % ; unbroken horses especially foals from heavy horses under one year old (+ 5.4 %,) showed an increase while other horses decreased by 6.1 %.

#### England and Wales.

YEAR	Horses	Cattle				Sheep	Pigs
		Total	Cows and heifers in milk	Cows in calf but not in milk	Heifers in calf		
1933. . . . .	902,300	6,621,800	2,179,600	358,000	418,000	18,085,300	3,064,400
1932. . . . .	917,100	6,358,000	2,116,600	352,000	402,800	18,495,400	3,184,600
1931. . . . .	938,500	6,065,000	2,043,100	321,700	425,300	17,749,200	2,783,000
1930. . . . .	961,300	5,849,800	2,033,400	288,800	352,800	16,315,800	2,310,200
1929. . . . .	999,300	5,957,600	2,054,100	293,700	364,800	16,105,500	2,366,500
1928. . . . .	1,038,400	6,026,000	2,066,200	301,700	355,200	16,386,100	2,967,900
1927. . . . .	1,077,200	6,275,200	2,096,400	307,000	387,300	17,072,300	2,691,500
1926. . . . .	1,128,800	6,253,100	2,065,100	294,600	389,600	16,858,700	2,200,000
1925. . . . .	1,164,100	6,163,300	2,035,100	299,600	378,500	15,974,400	2,644,356
1924. . . . .	1,232,198	5,894,329	2,014,241	281,556	367,405	14,843,195	3,228,330
1923. . . . .	1,281,279	5,822,992	1,974,546	269,021	371,230	13,835,533	2,611,606



The total number of cattle has increased since 1930 and in 1933 reached a record level, 4.1 % higher than that of 1932. The dairy herd is also the highest on record: cows and heifers in milk: + 3.0 % compared with 1932; cow in calf but not in milk: + 1.7 %; heifers in calf: + 3.8 %. Other cattle over one year old showed comparatively large increases.

The total number of sheep shows a decrease of 2.2 % from the very high level of 1932. Breeding ewes increased by 1.7 % reaching the highest on record since 1909. Other sheep decreased, the change being largely attributed to sheep one year old and above (— 17.5 %).

The total number of pigs was 3.8 % less than that of 1932 which was the highest noted since 1924. Sows kept for breeding were less by 4.8 % and other pigs declined by 3.6 %.

### Poultry in England and Wales.

The figures in the following table, compiled from the returns furnished as on June 3rd 1933 by occupiers of agricultural holdings exceeding one acre in extent, reveal an increase in each class of poultry.

Year	Fowls under 6 months old on 4th June	Fowls over 6 months old on 4th June	Total Fowls	Ducks	Geese	Turkeys
Thousand head						
1933 . . . . .	33,731	27,432	61,163	2,677	661	811
1932 . . . . .	32,130	25,617	57,747	2,632	573	553
1931 . . . . .	29,006	23,558	52,564	2,494	551	529
1930 . . . . .	26,460	21,441	47,901	2,383	604	667
1929 . . . . .	22,424	20,333	42,757	2,243	616	696
1928 . . . . .	20,344	19,572	39,916	2,507	620	593
1927 . . . . .	21,172	18,319	39,491	2,797	653	604
1921 . . . . .	13,114	11,702	24,816	2,391	517	445
1913 . . . . .	15,291	13,735	29,026	2,188	577	652

The total number of fowls in England and Wales as returned on June 3, 1933, showed an increase of 6 % on that of 1932, the increase being general in the case of both adults and young birds; the number now recorded is over double that of 1924.

Ducks continued the increase noted since 1929 but whereas in 1932 those over six months old increased in number by 14 % and those under that age by only 1 %, on June 3rd 1933, 103,000 fewer adult ducks were returned than in 1932 but 148,000 more young ducks, an increase in the latter equivalent to 9 %. The net increase in the total number of ducks in the country was 2 %.

The increase in the number of geese noted in 1932 has been maintained, the numbers returned on 3 June 1933, being 15 % larger.

The number of turkeys returned on June 3 was higher than in any of the eleven years for which particulars are available and showed an increase of 47 % over 1932.

### Livestock in Hungary.

In the following table are given the principal results for 1933 of the annual spring enumeration of livestock carried out on 31 March (according to § 23 of the article of law XII of 1894) on the occasion of the veterinary inspection; comparisons are made with the corresponding data for the preceding five years and for 1911 (present territory).

CLASSIFICATION	1933	1932	1931	1930	1929	1928	1911
<i>Cattle</i> . . . . .	1,689,793	1,812,917	1,807,429	1,777,886	1,812,376	1,804,575	2,149,756
of which: cows . . . . .	...	906,127	902,680	904,745	913,542	906,763	—
<i>Buffaloes</i> . . . . .	6,822	5,917	6,465	6,747	6,978	7,072	—
of which: cows . . . . .	...	1,485	1,486	1,655	1,637	1,549	—
<i>Horses</i> . . . . .	819,871	845,548	864,571	860,379	892,131	917,974	896,498
of which:							
mares over 3 years old . . . . .	418,593	435,742	446,207	432,589	441,081	445,375	—
mares under 3 years old . . . . .	57,549	56,963	60,239	73,068	85,672	97,883	—
adult geldings . . . . .	278,683	287,529	289,695	272,339	267,886	262,585	—
<i>Asses</i> . . . . .	3,985	3,991	4,291	4,294	4,485	4,690	7,994
<i>Mules</i> . . . . .	1,100	1,059	1,109	1,242	1,386	1,539	424
<i>Sheep</i> . . . . .	1,056,218	1,210,491	1,440,409	1,463,834	1,573,180	1,566,451	2,406,041
of which:							
ewes over 1 year old . . . . .	659,893	739,531	855,136	880,018	919,085	924,647	—
ewes under 1 year old . . . . .	135,164	163,056	196,384	184,472	221,957	218,704	—
wethers over 1 year old . . . . .	122,661	150,590	185,480	211,282	223,795	208,622	—
<i>Goats</i> . . . . .	22,840	22,749	24,027	22,184	23,793	29,836	20,647
<i>Pigs</i> . . . . .	1,899,479	2,361,195	2,714,635	2,361,566	2,582,255	2,661,539	3,322,407
of which:							
sows over 1 year old for fattening . . . . .	356,640	439,129	494,490	438,073	505,770	523,648	—
sows over 1 year old for meat . . . . .	57,129	79,712	77,330	58,695	48,661	55,553	—
sows under 1 year old for fattening . . . . .	438,595	564,775	678,252	598,790	701,586	744,943	—
sows under 1 year old for meat . . . . .	93,733	129,711	123,831	88,757	77,439	81,426	—
castrated pigs over 1 year old . . . . .	205,382	217,911	237,289	255,664	268,457	230,142	—
castrated pigs under 1 year old for fattening . . . . .	462,286	547,250	688,422	591,845	650,301	650,943	—
castrated pigs under 1 year old for meat . . . . .	113,100	153,215	140,426	105,545	81,813	81,155	—

1) Including buffaloes.

### Livestock in Lithuania.

YEAR	Horses	Cattle		Sheep	Pigs	Poultry	
		Total	Milch cows			Fowls	Geese
1933 . . . . .	586,673	1,340,074	831,813	1,321,619	1,305,824	2,949,920	985,525
1932 . . . . .	585,730	1,304,870	795,710	1,316,970	1,389,580	3,082,720	895,004
1931 . . . . .	592,170	1,119,980	692,800	604,780	1,337,580	3,740,640	241,570
1930 . . . . .	559,000	1,170,000	696,000	*) 1,097,000	1,136,000	†) 2,262,000	†) 795,000
1929 . . . . .	588,300	1,160,100	691,800	*) 1,125,300	943,600	†) 2,010,000	†) 623,500
1928 . . . . .	611,400	1,199,300	689,500	*) 1,467,800	1,060,400	†) 2,213,800	†) 873,300
1927 . . . . .	617,200	1,128,900	—	*) 1,409,500	1,009,500	—	—
1926 . . . . .	535,000	1,396,600	—	*) 1,573,200	1,441,300	—	—
1925 . . . . .	497,000	1,339,000	—	*) 1,455,000	1,488,000	—	—
1924 . . . . .	482,000	1,252,000	—	*) 1,399,000	1,564,000	—	—

\*) Sheep and goats. — †) Laying hens and geese on rural holdings.

## Livestock in Kingdom of Yugoslavia.

The favourable conditions of stockbreeding during 1932 (very abundant production of forage crops and of maize, the low prices of these products, the rise in the prices of live stock products, etc.) were not sufficient to arrest the decline in the number of live stock in 1932 as compared with 1931, a decline caused by the decrease in the birth-rate and the increase in the death-rate.

Year 1)	Cattle	Horses	Asses	Mules	Sheep	Goats	Pigs	Buffaloes
1932 . . . . .	3,812,208	1,156,999	114,719	16,499	8,510,441	1,871,618	2,863,177	38,704
1931 . . . . .	3,871,556	1,168,768	115,270	16,359	8,425,634	1,928,224	3,133,164	40,563
1930 . . . . .	3,812,172	1,161,235	106,944	15,843	7,953,139	1,731,430	2,923,862	37,487
1929 . . . . .	3,728,038	1,140,343	106,117	15,469	7,735,957	1,803,574	2,674,800	36,846
1928 . . . . .	3,654,261	1,109,246	103,528	15,165	7,722,247	1,750,006	2,662,790	32,116
1927 . . . . .	3,729,343	1,120,310	97,509	14,865	7,735,915	1,738,958	2,769,848	30,980
1926 . . . . .	3,706,019	1,116,858	96,298	14,551	7,932,845	1,721,263	2,806,182	31,519
1925 . . . . .	3,768,135	1,106,142	95,236	14,504	7,906,808	1,810,669	2,802,355	27,431
1924 . . . . .	3,784,267	1,053,875	89,779	14,190	7,618,708	1,718,368	2,517,955	28,626
1923 . . . . .	3,869,985	1,062,893	94,720	14,849	7,639,257	1,730,204	2,496,723	31,717
1922 . . . . .	4,058,419	1,043,528	86,036	15,002	8,461,504	1,801,409	2,867,020	31,938

1) At end of year.

The increase in the death-rate may be attributed to the epidemic of foot-and-mouth disease which had been particularly fatal to young pigs, calves, lambs and goats in the southern districts of the country.

At the beginning of 1933 the Government was constrained to prohibit the export of live stock from the regions affected by this epidemic.

To complete these considerations it is interesting to note the decrease in the exports of live stock in 1932 in comparison with the preceding years:

	1929	1930	1931	1932
Young pigs . . . . .	47,340	43,427	43,696	13,699
Calves . . . . .	5,637	15,808	17,930	12,890
Lambs . . . . .	460,655	509,935	445,274	305,558
Goats . . . . .	23,519	23,490	13,195	3,665

However, towards April, thanks to the measures taken by the competent authorities, the state of health of the live stock appreciably improved throughout the country.

On the other hand the number of poultry showed a more rapid increase in 1932 in comparison with the three previous years :

1932 . . . . .	All poultry	19,466,501
1931 . . . . .	» »	19,010,009
1930 . . . . .	» »	18,821,601
1929 . . . . .	» »	17,515,977

The increase was due particularly to the increase in the number of fowls.

### Dairy production in Canada.

Production of dairy and concentrated milk products in Canada in 1932 was as follows :

	1932	1931
	(000 lb.)	
Creamery butter . . . . .	213,739	225,955
Factory cheese . . . . .	120,312	113,957
Condensed milk . . . . .	14,825	15,486
Condensed skim milk . . . . .	5,098	4,403
Evaporated milk . . . . .	47,916	45,954
Whole milk powder . . . . .	789	2,413
Skim milk powder . . . . .	11,485	12,978
Cream powder . . . . .	26	37
Buttermilk powder . . . . .	957	1,043
Condensed buttermilk . . . . .	340	468
Condensed coffee . . . . .	113	170
Casein . . . . .	367	777
Sugar of milk . . . . .	95	125
Whey butter . . . . .	1,283	1,384
Ice cream (000 gallons) . . . . .	4,874	6,100
Milk sold (000 gallons) . . . . .	40,461	42,209
Cream sold (000 lb. b. fat) . . . . .	12,592	13,587
Whey cream (000 lb. b. fat) . . . . .	773	—
Ice cream mix (000 gallons) . . . . .	233	—

### Algerian herds in 1932.

The following table gives the numbers of the various species in 1932, in the nine preceding years and in 1914.

Years	Horses	Mules	Asses	Cattle	Sheep	Goats	Pigs	Camels
	(Thousands)							
1932 . . . . .	168	170	319	893	5,269	2,743	86	201
1931 . . . . .	167	169	305	872	4,671	2,631	83	210
1930 . . . . .	173	169	302	938	7,172	3,267	87	201
1929 . . . . .	163	165	296	897	6,196	3,050	89	185
1928 . . . . .	164	164	279	887	5,614	2,920	89	173
1927 . . . . .	162	164	275	850	5,076	2,648	95	156
1926 . . . . .	167	165	285	946	6,786	3,126	93	173
1925 . . . . .	161	161	282	892	6,171	3,033	89	176
1924 . . . . .	163	157	292	892	5,790	2,805	93	150
1923 . . . . .	157	154	266	794	5,397	2,621	107	146
1914 . . . . .	203	185	268	1,093	9,140	3,794	112	213

The number of horses and asses has been fairly constant for some years but a certain tendency to increase may be noticed despite slight annual oscillations ; in 1932 the total of horses included 71,189 males and 96,922 females. The number of asses has increased almost regularly since 1927 ; in 1932 the increase

was 4.7 %. The same applies to camels though the winter of 1931-32 was marked for the first time since the War by a reduction. For pigs there has been a slow but steady regression.

The number of these species responds very little to seasonal conditions ; the variations are determined principally by economic factors. On the other hand the trend of cattle and still more, that of sheep and goats, which during the War showed a heavy downward movement, has in the past decade been determined essentially by climatic factors.

The decade 1923-32 may be divided into three phases. The first phase, that of reconstitution, from 1923 to 1926, ended with the winter of 1926-27 which severely reduced the numbers of livestock almost to the 1923 figure. Reconstitution was rapidly carried out during the years 1928, 1929 and 1930 and the number of sheep and goats rose above the 1927 level ; the winter of 1930-31, if it partially spared cattle, was disastrous for sheep and goats, the numbers of which were reduced by one-third in the former and by one-fifth in the latter.

During the winter of 1931-32, which marks the beginning of the third phase, reconstitution had begun but in rather difficult economic conditions. The statistics do not indicate age-distribution, a fact which prevents precise measurement of the degree of reconstitution. Two facts should, however, be noted : the general lack of markets, which led breeders to retain a certain number of animals and prevented their turning their attention to new branches of production, and secondly the relatively high proportion of cows and heifers on the one hand and of ewes and lambs on the other were elements favouring increase in the numbers of livestock.

Years	Cattle			Sheep		
	Bulls	Oxen and calves	Cows and heifers	Rams	Sheep and ram-lambs	Ewes and ewe-lambs
	Thousands			Thousands		
1932 . . . . .	64	374	456	329	1,786	3,155
1931 . . . . .	63	370	439	322	1,642	2,707
1930 . . . . .	55	396	476	404	2,625	4,143
1926 . . . . .	68	398	480	377	2,470	3,939

During the winter of 1932-33 climatic conditions were on the whole very favourable ; lambing was excellent, the percentage exceeding 100. Economic conditions were satisfactory, marketing, especially in the interior being rather easy and resulting in better prices. It is certain that during the past winter the reconstitution of the Algerian livestock population continued even more actively than in 1931-32.

There is very little chance of the sheep flocks attaining their normal level, the margin being still too large in 1932, but it is possible that cattle and goats regain the 1930 level.

## Current information on livestock and derivatives.

*Irish Free State* : The milk yield was slightly below normal.

*Great Britain and Northern Ireland* : In Northern Ireland livestock were generally in good condition and normal health with little disease reported. The milk yield generally was fairly well maintained. In Scotland, because of the dry weather and scarcity of grass, in eastern districts the milk yield was rather below the normal for the season but elsewhere the production of milk was well maintained. In England and Wales milk yields have fallen and in many districts hand feeding has been necessary to maintain contracts.

*Netherlands* : Feed for dairy cattle has been rather unfavourable in part of the provinces of Gelderland and northern Brabant and also in Zealand and northern parts of the country. Dairy production was normal only in Friesland ; in the other provinces it was below the average. In Groningen, Drenthe and Overijssel production was, on the contrary, above the normal.

*United States* : According to an estimate published by the Department of Agriculture the number of cattle on feed for market in the Corn Belt States on August 1 was not greatly different from the five-year average for that date but about 13 % more than on August 1, 1932. Increases are shown in nearly all States but the increase was somewhat larger for the area east of the Mississippi River than for the area west.

The distribution of weights was much the same as last year. Inspected shipments into the Corn Belt States during the 6 months January 1 to July 1 were 35 % larger than in the same period of 1932 but about the same as in that of 1931. Decreased cattle feeding is forecast for the coming fall and winter especially east of Mississippi River where prospects for maize production on August 1 were poorer than last year.

*French Morocco* : Livestock in August continued to graze on stubble land which was nearly exhausted. In eastern Morocco there were some irrigated areas, on which the growth of grass was improved by the warmth. Sorghum and maize stubble land have furnished feed. Pastures were nearly dry. In the Marrakesh area there was some stubble and couchgrass. In the mountains, on the Meknes side, there still remained some supplies. Couch-grass gave a negligible supplement.

*Union of South Africa* : Rains have improved conditions for livestock in the previously drought stricken areas of the west coast, though cold weather has been a hindrance ; stock are still in poor conditions but heavy losses are no longer reported. Conditions in inland areas of the north-west show no improvement. Although sheep in many areas have maintained their condition well, the autumn lambing crop has, on the whole, been a failure. Cattle have suffered most in condition as a result of the severe winter and shortage of grazing.

## LATEST NEWS

*Italy* : Production of grapes for wine is forecast at 12,590,000 thousand pounds, or about 21 % lower than that of 1932. Production of rough rice is estimated at 13,252,000 centals (29,449,000 bushels) or 8.5 % less than in 1932. Production of raw sugar is forecast at 6,370,000 centals (320,000 short tons), representing a decrease of 9 % on that of the 1932-33 season.

*Switzerland* : Production of raw sugar is forecast at 163,000 centals (8,200 short tons), an increase of about 7 % on that of the 1932-33 season.

*Egypt* : According to the first estimate published by the Egyptian Government, cotton production is forecast at 7,847,000 centals (1,642,000 bales) of ginned cotton, compared with 4,799,000 (1,004,000) in 1932 (third estimate) and 7,393,000 (1,547,000) of the average 1927-31 ; percentages : 163.5 and 106.1.

## TRADE

COUNTRIES	JULY				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	172	159	0	0	1,874	5,688	0	0	—	—
Hungary . . . . .	287	108	0	0	3,254	7,912	2	0	—	—
Lithuania . . . . .	0	0	0	0	2	20	0	0	—	—
Poland . . . . .	121	183	0	4	855	1,598	483	346	—	—
Rumania . . . . .	...	...	...	...	24	21,138	9	7	—	—
Yugoslavia . . . . .	0	112	0	0	503	8,796	0	0	—	—
U. S. S. R. . . . .	...	...	...	...	10,862	39,820	1,373	337	—	—
Canada . . . . .	9,824	11,773	0	4	144,086	109,685	31	75	—	—
United States . . . . .	18	2,011	569	615	11,502	52,805	5,582	7,361	—	—
Argentina . . . . .	8,519	1,717	—	—	76,265	82,114	—	—	—	—
Chile . . . . .	...	...	...	...	7	9	708	0	—	—
Turkey . . . . .	...	...	...	...	174	908	0	0	—	—
Algeria . . . . .	...	...	...	...	4,808	3,292	862	1,257	—	—
Tunis . . . . .	478	1,453	4	0	3,389	5,337	344	401	—	—
Australia . . . . .	4,275	3,706	0	0	72,197	73,793	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	11	4	1,495	3,329	12,540	7,313	18,433	21,006	—	—
Austria . . . . .	0	0	589	556	0	0	7,183	6,418	—	—
Belgium . . . . .	104	172	1,658	2,791	2,163	3,587	25,704	31,550	—	—
Denmark . . . . .	0	0	467	518	15	9	6,202	8,719	—	—
Spain . . . . .	0	0	0	1,526	0	0	0	3,051	—	—
Estonia . . . . .	0	0	0	0	0	0	0	256	—	—
Irish Free State . . . . .	11	0	556	434	40	13	8,373	6,369	—	—
Finland . . . . .	0	0	90	53	0	0	922	428	—	—
France . . . . .	0	0	1,856	4,793	49	9	23,746	52,259	—	—
Gr. Brit. and N. Irel. . . . .	35	66	9,464	11,188	553	1,206	122,626	137,664	—	—
Greece . . . . .	0	0	1,027	919	0	0	11,790	14,116	—	—
Italy . . . . .	0	0	611	1,900	13	18	11,219	23,575	—	—
Latvia . . . . .	0	0	0	152	2	0	18	575	—	—
Norway . . . . .	0	0	377	152	0	0	3,552	3,294	—	—
Netherlands . . . . .	4	2	1,843	1,451	514	110	15,622	17,875	—	—
Portugal . . . . .	—	—	...	...	—	—	472	655	—	—
Sweden . . . . .	0	0	57	287	13	9	1,940	4,054	—	—
Switzerland . . . . .	0	2	908	1,023	15	18	11,473	12,683	—	—
Czechoslovakia . . . . .	0	0	1,545	1,065	2	4	6,594	13,199	—	—
India . . . . .	2	4	0	0	46	183	1,060	179	—	—
Japan . . . . .	—	—	728	340	—	—	11,667	17,070	—	—
Syria and Lebanon . . . . .	9	15	2	37	278	511	254	328	—	—
Egypt . . . . .	2	0	2	82	9	2	4	994	—	—
Union of South Africa . . . . .	...	...	...	...	150	2	159	999	—	—
New Zealand . . . . .	...	...	...	...	11	701	0	99	—	—
TOTALS . . . . .	23,872	21,485	23,848	33,228	346,204	425,909	299,108	386,199	—	—
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	2	0	0	66	990	0	0	—	—
Hungary . . . . .	128	66	0	0	1,651	1,486	0	2	—	—
Lithuania . . . . .	0	7	0	0	35	9	0	0	—	—
Poland . . . . .	461	298	0	0	6,572	2,513	216	123	—	—
Rumania . . . . .	...	...	...	...	9	1,662	0	0	—	—
U. S. S. R. . . . .	...	...	...	...	5,199	23,579	—	—	—	—
Canada . . . . .	121	1,389	0	0	1,605	5,066	0	0	—	—
United States . . . . .	2	143	—	—	33	622	—	—	—	—
Argentina . . . . .	280	26	—	—	3,203	5,097	—	—	—	—
Turkey . . . . .	...	...	...	...	313	675	0	0	—	—
Algeria . . . . .	...	...	...	...	11	11	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	4	0	567	2,022	2,978	2,046	7,390	12,103	—	—
Austria . . . . .	0	0	24	115	0	0	498	1,726	—	—
Belgium . . . . .	37	68	174	423	368	639	2,463	2,709	—	—
Denmark . . . . .	0	0	443	582	0	0	5,776	4,731	—	—
Estonia . . . . .	0	0	0	0	0	0	0	13	—	—
Finland . . . . .	0	0	165	190	0	0	1,426	1,202	—	—
France . . . . .	0	0	51	163	0	0	465	1,735	—	—
Italy . . . . .	0	0	9	7	0	0	265	157	—	—
Latvia . . . . .	0	0	0	0	0	0	0	99	—	—
Norway . . . . .	0	0	231	115	0	0	2,943	3,415	—	—
Netherlands . . . . .	4	7	459	560	75	331	4,330	4,176	—	—
Sweden . . . . .	0	0	4	146	15	26	271	1,334	—	—
Switzerland . . . . .	0	0	2	22	0	0	324	108	—	—
Czechoslovakia . . . . .	11	0	2	112	66	7	99	5,124	—	—
TOTALS . . . . .	1,048	2,006	2,131	4,457	22,199	44,759	26,466	38,757	—	—

1) 2) See notes page 644.

COUNTRIES	JULY				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	311	0	0	51	2,229	64	68	229	—	—
Belgium . . . . .	2	7	4	4	53	73	66	51	—	—
Bulgaria . . . . .	2	15	0	0	55	752	0	0	—	—
Spain . . . . .	2	2	0	0	9	18	0	0	—	—
France . . . . .	351	119	71	29	4,162	4,764	529	262	—	—
Hungary . . . . .	55	11	0	0	864	2,130	0	0	—	—
Italy . . . . .	273	181	33	15	3,695	2,235	304	287	—	—
Latvia . . . . .	0	0	0	0	0	0	0	0	—	—
Lithuania . . . . .	2	18	0	0	26	511	0	0	—	—
Poland . . . . .	4	18	0	0	234	26	0	4	—	—
Rumania . . . . .	...	...	...	...	13	855	2	0	—	—
Yugoslavia . . . . .	2	7	0	0	57	104	0	0	—	—
Canada . . . . .	966	875	7	2	9,566	10,551	49	40	—	—
United States . . . . .	569	681	0	0	8,470	15,091	2	0	—	—
Argentina . . . . .	212	77	—	—	1,620	1,548	—	0	—	—
Chile . . . . .	...	...	...	...	1	20	386	0	—	—
India . . . . .	29	33	0	0	340	836	2	0	—	—
Turkey . . . . .	395	351	4	0	6,094	3,470	15	106	—	—
Japan . . . . .	...	...	...	...	0	11	0	4	—	—
Algeria . . . . .	...	...	...	...	392	99	60	53	—	—
Tunis . . . . .	15	18	4	2	172	146	55	20	—	—
Australia . . . . .	860	928	0	0	12,553	13,995	0	0	—	—
<i>Importing Countries:</i>										
Austria . . . . .	0	0	26	22	2	7	578	1,261	—	—
Denmark . . . . .	2	2	99	62	18	13	794	1,290	—	—
Estonia . . . . .	0	0	0	0	0	9	0	15	—	—
Irish Free State . . . . .	0	0	93	359	2	26	1,797	4,050	—	—
Finland . . . . .	0	0	115	132	0	0	1,239	1,596	—	—
Gr. Brit. and N. Irel. . . . .	225	492	1,043	708	4,200	5,628	9,495	11,224	—	—
Greece . . . . .	0	0	2	2	0	0	22	66	—	—
Norway . . . . .	0	0	88	93	4	9	1,135	1,358	—	—
Netherlands . . . . .	7	2	90	29	24	71	933	723	—	—
Portugal . . . . .	—	—	...	...	—	—	216	163	—	—
Sweden . . . . .	0	0	0	2	0	0	9	37	—	—
Czechoslovakia . . . . .	0	0	75	123	7	9	437	1,182	—	—
Ceylon . . . . .	—	—	29	22	—	—	384	401	—	—
Java and Madura . . . . .	—	—	...	...	—	—	893	1,060	—	—
Indo-China . . . . .	—	—	31	26	—	—	342	388	—	—
Syria and Lebanon . . . . .	4	0	55	31	99	93	802	397	—	—
Egypt . . . . .	0	0	4	13	2	0	205	2,430	—	—
Union of South Africa . . . . .	...	...	...	...	2	2	7	15	—	—
New Zealand . . . . .	...	...	...	...	2	2	214	214	—	—
Totals . . . . .	4,288	3,821	1,873	1,727	54,970	63,168	21,040	28,926	—	—
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	42	2	0	0	172	406	0	0	—	—
Spain . . . . .	2	4	0	0	53	15	0	0	—	—
Hungary . . . . .	128	2	0	0	1,504	55	0	7	—	—
Lithuania . . . . .	0	0	0	0	2	0	0	0	—	—
Poland . . . . .	35	7	0	0	3,558	3,146	0	0	—	—
Rumania . . . . .	...	...	...	...	10,719	15,501	0	0	—	—
Czechoslovakia . . . . .	4	137	0	0	3,516	2,112	2	2	—	—
U. S. S. R. . . . .	...	...	...	...	7,665	17,783	—	—	—	—
Canada . . . . .	159	811	0	0	2,588	6,499	0	0	—	—
United States . . . . .	390	384	—	—	4,398	2,524	—	—	—	—
Argentina . . . . .	562	22	—	—	8,774	6,418	—	—	—	—
Chile . . . . .	...	...	...	...	260	487	0	0	—	—
India . . . . .	0	0	18	0	4	666	20	0	—	—
Syria and Lebanon . . . . .	2	4	0	0	33	384	337	104	—	—
Turkey . . . . .	...	...	...	...	833	2,875	0	0	—	—
Egypt . . . . .	44	2	0	0	152	2	0	273	—	—
Tunis . . . . .	68	355	4	2	2,758	820	40	556	—	—
Australia . . . . .	71	20	0	0	1,420	1,614	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	0	0	439	774	4	18	3,763	15,970	—	—
Austria . . . . .	0	0	229	79	0	0	1,982	2,075	—	—
Belgium . . . . .	53	84	364	487	1,400	1,676	9,085	9,396	—	—
Denmark . . . . .	13	0	289	401	461	474	2,231	3,331	—	—
Irish Free State . . . . .	0	0	2	172	2	25	139	483	—	—
France . . . . .	0	0	355	611	4	15	7,641	9,482	—	—
Gr. Brit. and N. Irel. . . . .	0	20	1,160	467	40	31	13,558	14,039	—	—
Greece . . . . .	0	0	0	2	0	0	20	172	—	—
Italy . . . . .	0	0	11	0	0	0	957	800	—	—
Latvia . . . . .	0	0	20	0	0	0	0	4	—	—
Norway . . . . .	0	0	0	9	0	0	159	794	—	—
Netherlands . . . . .	9	2	862	600	112	262	8,810	9,112	—	—
Switzerland . . . . .	0	0	82	148	0	2	4,268	2,989	—	—
Yugoslavia . . . . .	51	2	0	0	95	13	4	37	—	—
Algeria . . . . .	...	...	...	...	77	615	1,918	2,233	—	—
Totals . . . . .	1,633	1,858	3,824	3,763	50,604	64,439	54,934	71,859	—	—

1) 2) See notes page 644.



COUNTRIES	JULY				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	9	2	0	4	55	73	9	218	—	—
Hungary . . . . .	64	0	0	0	465	7	0	2	—	—
Lithuania . . . . .	0	4	0	0	0	20	0	0	—	—
Poland . . . . .	35	7	0	0	306	62	0	0	—	—
Rumania . . . . .	...	...	...	...	626	258	0	0	—	—
Czechoslovakia . . .	115	104	0	0	3,038	884	0	57	—	—
Yugoslavia . . . . .	0	0	0	0	0	2	0	0	—	—
Canada . . . . .	170	174	0	40	3,766	4,628	683	655	—	—
United States . . . .	26	115	24	0	1,217	897	29	22	—	—
Argentina . . . . .	500	895	—	—	10,377	16,486	—	—	—	—
Chile . . . . .	...	...	...	...	207	273	0	0	—	—
Algeria . . . . .	...	...	...	...	123	284	31	368	—	—
Tunis . . . . .	9	40	0	0	126	212	0	0	—	—
Australia . . . . .	4	11	0	0	93	108	2	2	—	—
<i>Importing Countries:</i>										
Germany . . . . .	31	0	24	9	234	9	423	223	—	—
Austria . . . . .	0	0	75	110	0	0	642	1,464	—	—
Belgium . . . . .	0	4	66	163	7	37	877	1,504	—	—
Denmark . . . . .	7	0	24	11	71	66	375	500	—	—
Estonia . . . . .	0	0	0	0	0	0	0	7	—	—
Finland . . . . .	0	0	53	9	2	20	163	55	—	—
France . . . . .	0	0	68	507	4	7	1,155	3,214	—	—
Gr. Brit. and N. Irel.	0	2	708	604	24	203	6,347	8,494	—	—
Italy . . . . .	0	0	84	454	0	0	2,683	4,074	—	—
Latvia . . . . .	0	0	0	0	11	0	0	7	—	—
Norway . . . . .	0	0	0	0	2	2	13	273	—	—
Netherlands . . . . .	2	0	97	130	26	44	2,610	2,383	—	—
Sweden . . . . .	0	31	9	60	46	181	580	1,105	—	—
Switzerland . . . . .	0	0	267	362	0	2	4,899	5,033	—	—
<b>Totals . . . . .</b>	<b>972</b>	<b>1,389</b>	<b>1,499</b>	<b>2,463</b>	<b>20,826</b>	<b>24,765</b>	<b>21,521</b>	<b>29,660</b>	<b>—</b>	<b>—</b>
<b>Maize. — Thousand cents (1 cental = 100 lb.).</b>										
					NINE MONTHS (November 1-July 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
<i>Exporting Countries:</i>										
Bulgaria . . . . .	388	110	0	0	3,060	2,434	0	0	2,890	0
Rumania . . . . .	...	...	...	...	29,364	25,613	0	2	34,421	2
Yugoslavia . . . . .	1,967	13	0	0	10,851	1,548	0	24	1,825	26
United States . . . .	293	190	7	9	3,137	1,530	75	190	3,084	220
Argentina . . . . .	9,663	16,387	—	—	72,967	140,618	—	—	175,901	—
Brazil . . . . .	...	...	...	...	0	0	—	—	2	—
Java and Madura . . .	79	57	—	—	1,429	2,222	—	—	2,465	—
Indo-China . . . . .	723	238	—	—	3,508	1,731	—	—	3,459	—
Syria and Lebanon . .	0	0	20	2	4	7	227	33	7	37
Turkey . . . . .	...	...	...	...	168	240	0	0	373	0
Egypt . . . . .	9	2	0	2	207	9	4	40	15	46
Union of South Afr.	0	0	0	0	3,510	1,903	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	179	1,779	0	0	5,009	13,680	0	17,007
Austria . . . . .	0	0	1,468	1,027	0	0	8,911	6,169	0	7,628
Belgium . . . . .	101	123	1,576	1,482	831	1,171	13,521	14,149	1,385	18,700
Denmark . . . . .	0	0	1,563	2,478	0	0	11,707	17,714	0	21,231
Spain . . . . .	0	0	181	902	0	0	1,482	5,659	0	6,931
Irish Free State . . .	0	0	635	1,228	0	0	5,086	10,137	0	13,658
Finland . . . . .	0	0	154	33	0	0	794	335	0	582
France . . . . .	0	2	915	2,167	2	24	13,073	17,558	26	25,869
Gr. Brit. and N. Ire	220	333	5,218	4,557	1,360	2,410	42,887	46,560	3,208	64,058
Greece . . . . .	0	0	55	37	0	0	597	3,338	0	3,382
Hungary . . . . .	774	0	0	214	3,759	62	0	653	93	939
Italy . . . . .	825	0	267	1,894	1,770	4	1,559	13,481	7	15,737
Norway . . . . .	0	0	456	201	0	0	2,593	2,915	0	4,092
Netherlands . . . . .	2	18	2,877	2,608	71	187	25,073	28,706	223	36,892
Poland . . . . .	0	0	18	18	0	0	73	95	0	126
Portugal . . . . .	—	—	...	...	—	—	772	814	—	1,407
Sweden . . . . .	0	0	664	591	0	0	3,829	4,647	0	6,135
Switzerland . . . . .	0	0	150	227	0	2	1,556	2,511	2	3,717
Czechoslovakia . . .	0	0	783	897	0	0	2,454	9,105	0	9,958
Canada . . . . .	0	2	335	229	20	9	3,554	3,128	13	3,891
Japan . . . . .	—	—	4	2	—	—	42	1,693	—	1,695
Tunis . . . . .	0	0	0	0	0	0	0	322	0	324
<b>Totals . . . . .</b>	<b>15,044</b>	<b>17,475</b>	<b>17,525</b>	<b>22,584</b>	<b>136,028</b>	<b>181,724</b>	<b>144,878</b>	<b>203,658</b>	<b>234,390</b>	<b>264,290</b>

1) 2) See notes page 644.

COUNTRIES	JULY				SEVEN MONTHS (January 1-July 31)				TWELVE MONTHS (January 1-DEC. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	31	46	0	0	97	505	0	0	871	0
Italy . . . . .	364	190	20	7	2,562	2,090	90	31	3,503	55
United States . . . . .	179	234	22	4	992	1,795	172	128	2,586	190
Brazil . . . . .	—	—	—	—	146	419	—	—	615	—
India . . . . .	2,939	2,837	31	29	29,516	35,155	284	419	48,001	683
Indo-China . . . . .	1,795	2,330	—	—	19,760	16,751	—	—	26,983	—
Siam . . . . .	3,020	2,286	—	—	21,735	19,379	—	—	34,106	—
Egypt . . . . .	267	18	0	11	1,272	168	7	708	1,032	210
<i>Importing Countries:</i>										
Germany . . . . .	73	137	661	1,091	542	635	4,211	4,519	1,047	8,481
Austria . . . . .	0	0	62	64	0	0	368	302	0	549
Belgium . . . . .	9	24	132	132	44	137	714	714	201	1,213
Denmark . . . . .	0	0	15	9	0	0	95	60	0	139
Estonia . . . . .	—	—	0	0	—	—	9	33	—	15
Irish Free State . . . . .	0	0	0	0	0	0	33	33	—	2
France . . . . .	35	42	732	747	567	483	6,927	4,539	864	8,327
Gr. Brit. and N. Irel. . . . .	11	11	194	181	68	121	1,532	1,581	163	2,747
Greece . . . . .	—	—	35	22	—	—	276	322	—	540
Hungary . . . . .	0	0	71	53	0	0	276	236	0	465
Latvia . . . . .	0	0	4	2	0	0	20	7	0	18
Lithuania . . . . .	0	0	2	2	0	0	9	9	0	20
Norway . . . . .	0	0	2	4	0	0	55	42	0	71
Netherlands . . . . .	132	141	410	99	776	966	2,641	1,629	1,861	2,639
Poland . . . . .	20	26	198	249	82	214	988	796	317	1,027
Portugal . . . . .	—	—	—	—	—	—	381	527	—	875
Sweden . . . . .	—	—	11	0	—	—	104	90	—	90
Switzerland . . . . .	0	0	26	31	0	0	392	227	0	432
Czechoslovakia . . . . .	0	0	207	108	0	0	750	626	0	1,096
Yugoslavia . . . . .	0	0	49	29	0	2	311	269	2	494
Canada . . . . .	4	0	51	42	9	9	448	483	9	593
Chile . . . . .	—	—	—	—	—	—	77	134	—	187
Ceylon . . . . .	0	0	732	776	2	2	5,886	6,409	4	10,386
Java and Madura . . . . .	35	2	0	73	49	24	2,339	2,183	73	3,303
Japan . . . . .	18	355	236	282	295	620	1,832	2,046	1,034	3,369
Syria and Lebanon . . . . .	0	0	35	22	0	0	254	205	0	392
Turkey . . . . .	—	—	—	—	—	—	20	40	—	93
Algeria . . . . .	—	—	—	—	—	—	128	101	9	198
Tunis . . . . .	—	—	—	—	—	—	18	29	0	40
Union of South Africa . . . . .	—	—	—	—	—	—	498	489	0	895
Australia . . . . .	22	4	0	2	95	55	24	31	86	49
New Zealand . . . . .	—	—	—	—	—	—	35	35	0	64
TOTALS . . . . .	8,954	8,683	3,942	4,082	78,624	79,532	32,204	30,010	123,369	50,491
<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	0	0	0	2	15	0	2	4
Lithuania . . . . .	0	4	0	0	49	101	0	0	170	0
Argentina . . . . .	2,328	3,847	—	—	20,942	26,332	—	—	44,403	—
India . . . . .	717	130	0	0	2,172	1,012	0	0	1,728	0
Tunis . . . . .	2	4	0	0	2	9	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	0	2	648	917	29	9	5,617	5,271	20	9,841
Belgium . . . . .	4	2	108	243	42	112	1,980	1,984	139	3,673
Denmark . . . . .	—	—	51	31	—	—	306	284	—	534
Spain . . . . .	—	—	24	68	—	—	185	309	—	494
Finland . . . . .	0	0	0	0	0	0	53	29	0	75
France . . . . .	0	0	401	238	4	4	3,567	2,886	7	5,187
Gr. Brit. and N. Irel. . . . .	0	0	478	703	4	2	3,272	4,634	4	8,294
Greece . . . . .	0	0	24	7	0	0	64	40	0	88
Hungary . . . . .	0	0	0	0	0	7	31	0	9	29
Italy . . . . .	0	0	146	101	0	0	957	820	0	1,512
Latvia . . . . .	0	2	9	2	31	20	60	35	53	75
Norway . . . . .	0	0	18	11	0	0	234	194	0	403
Netherlands . . . . .	2	2	386	287	33	68	5,276	5,591	75	9,912
Poland . . . . .	—	—	0	35	0	2	258	108	4	271
Sweden . . . . .	—	—	71	79	—	—	580	650	—	957
Czechoslovakia . . . . .	0	0	60	55	2	2	287	373	2	798
Yugoslavia . . . . .	0	0	0	7	0	0	51	60	0	115
Canada . . . . .	0	0	0	0	243	2	0	256	205	256
United States . . . . .	—	—	778	57	—	—	2,879	3,115	—	4,502
Japan . . . . .	—	—	20	0	—	—	231	110	—	148
Australia . . . . .	0	0	29	11	0	0	249	247	0	450
TOTALS . . . . .	3,053	3,993	3,251	2,852	23,553	27,684	26,152	26,996	46,845	47,618

COUNTRIES	JULY				SEVEN MONTHS (January-I July 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932

<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	82	71	2	22	902	370	150	747	1,565	802
Denmark . . . . .	29,546	32,922	0	108	200,280	214,502	459	866	347,886	939
Estonia . . . . .	3,962	4,299	0	0	10,880	15,964	0	0	27,626	0
Irish Free State . . . . .	10,686	7,529	2	302	29,295	18,997	7	2,584	36,932	2,632
Finland . . . . .	2,108	2,346	26	0	15,163	20,955	249	0	32,020	0
Hungary . . . . .	668	384	0	0	4,231	2,108	0	0	4,495	0
Latvia . . . . .	4,952	6,149	0	0	20,448	22,362	0	0	41,002	2
Lithuania . . . . .	3,525	3,188	0	0	11,451	11,799	0	0	21,883	0
Norway . . . . .	26	55	88	4	761	1,841	95	68	2,421	90
Netherlands . . . . .	6,508	2,487	53	163	44,611	21,008	736	8,523	44,926	9,323
Poland . . . . .	745	276	0	68	1,528	2,540	2	176	2,707	866
Sweden . . . . .	3,232	2,778	2	4	17,785	17,974	24	18	29,875	33
U. S. S. R. . . . .	—	—	—	—	4,753	6,193	—	—	68,198	—
Argentina . . . . .	269	1,521	—	—	19,123	34,103	—	—	55,925	—
India . . . . .	9	7	29	20	115	148	260	254	262	428
Syria and Lebanon . . . . .	7	7	271	170	66	174	955	1,221	315	1,867
Australia . . . . .	4,270	11,197	2	0	106,149	115,803	2	0	229,105	0
New Zealand . . . . .	25,124	14,901	—	—	165,032	127,423	—	—	244,784	—
<i>Importing Countries:</i>										
Germany . . . . .	0	7	11,349	8,448	9	150	69,278	86,201	478	153,264
Belgium . . . . .	106	227	847	1,971	381	1,453	17,084	31,319	1,841	46,760
Spain . . . . .	0	2	0	0	15	24	4	24	44	42
France . . . . .	796	955	99	306	4,116	4,354	16,054	15,322	7,921	26,140
Gr. Brit. and N. Irel. . . . .	798	750	81,933	90,037	6,387	30,170	595,508	557,339	35,693	946,298
Greece . . . . .	—	—	44	40	—	—	320	774	—	1,197
Italy . . . . .	18	40	26	37	708	670	1,429	3,305	827	3,818
Switzerland . . . . .	0	0	18	97	2	2	814	6,883	7	8,151
Czechoslovakia . . . . .	0	0	31	77	2	26	454	2,057	26	2,703
Canada . . . . .	51	1,629	7	0	231	2,372	1,367	185	3,505	238
United States . . . . .	82	157	95	42	628	924	758	728	1,607	1,014
Ceylon . . . . .	—	—	49	55	—	—	388	377	—	602
Java and Madura . . . . .	—	—	—	—	—	—	4,817	4,793	—	8,766
Japan . . . . .	—	—	2	11	—	—	194	97	—	163
Algeria . . . . .	—	—	—	—	11	22	1,704	1,702	35	3,955
Egypt . . . . .	31	9	46	57	218	342	470	467	384	814
Tunis . . . . .	0	0	157	77	4	2	1,036	697	4	1,305
<b>Totals . . . . .</b>	<b>97,601</b>	<b>93,893</b>	<b>95,178</b>	<b>102,116</b>	<b>665,285</b>	<b>674,775</b>	<b>714,618</b>	<b>726,727</b>	<b>1,244,301</b>	<b>1,222,212</b>

<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	62	198	0	7	952	606	0	2	2,601	4
Denmark . . . . .	1,960	1,545	4	0	13,973	7,432	46	95	14,535	130
Finland . . . . .	659	646	2	0	4,802	4,041	18	11	7,225	26
Italy . . . . .	2,313	2,714	888	558	30,728	35,706	5,536	4,808	66,333	8,772
Lithuania . . . . .	154	141	0	0	721	955	2	2	1,768	7
Norway . . . . .	143	287	7	9	2,002	1,929	95	132	3,644	240
Netherlands . . . . .	12,566	14,844	68	73	80,886	95,540	425	600	170,061	1,076
Poland . . . . .	13	26	31	40	108	527	273	333	767	586
Switzerland . . . . .	3,386	3,596	295	291	26,149	23,969	1,911	2,917	43,702	4,755
Czechoslovakia . . . . .	179	342	375	280	1,532	3,874	1,629	1,695	6,124	3,071
Yugoslavia . . . . .	474	265	7	7	1,336	990	44	99	2,617	150
Canada . . . . .	10,761	15,995	90	71	17,798	25,069	448	611	86,940	1,166
Australia . . . . .	115	152	2	4	6,191	3,232	33	11	8,801	60
New Zealand . . . . .	15,783	8,100	0	0	141,469	119,032	4	2	198,789	2
<i>Importing Countries:</i>										
Germany . . . . .	225	220	8,799	10,342	2,555	2,247	52,693	58,348	4,237	108,688
Austria . . . . .	461	410	174	251	2,608	1,616	1,453	2,564	3,982	3,732
Belgium . . . . .	15	51	4,162	3,477	201	335	26,480	25,071	551	45,660
Spain . . . . .	15	26	229	227	608	168	1,087	1,122	238	2,480
Irish Free State . . . . .	0	4	9	231	0	26	320	1,243	37	2,019
France . . . . .	1,634	1,543	3,049	3,109	14,945	16,881	30,585	27,979	29,211	52,131
Gr. Brit. and N. Irel. . . . .	644	525	24,498	31,965	3,739	4,068	197,746	195,998	7,242	336,733
Greece . . . . .	84	31	26	73	615	93	661	1,208	620	1,753
Hungary . . . . .	2	2	0	0	29	26	11	11	33	11
Portugal . . . . .	—	—	—	—	—	—	172	218	—	608
Sweden . . . . .	—	—	33	33	—	—	452	483	—	1,045
United States . . . . .	185	126	3,439	3,342	882	902	29,227	28,828	1,490	55,629
India . . . . .	0	0	77	53	0	2	549	487	2	950
Java and Madura . . . . .	—	—	—	—	—	—	814	686	—	1,642
Syria and Lebanon . . . . .	0	0	44	57	15	22	939	509	68	1,195
Algeria . . . . .	—	—	—	—	64	75	4,700	3,871	159	11,100
Egypt . . . . .	4	18	298	379	86	134	3,020	2,549	254	5,260
Tunis . . . . .	7	2	148	128	33	7	1,570	1,164	13	2,191
<b>Totals . . . . .</b>	<b>51,844</b>	<b>51,809</b>	<b>46,754</b>	<b>55,007</b>	<b>355,027</b>	<b>349,504</b>	<b>362,943</b>	<b>363,657</b>	<b>662,044</b>	<b>652,872</b>

1) 2) 4) See notes page 644.

COUNTRIES	JULY				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	3,757	2,432	60	42	45,676	46,789	653	620	—	—
Argentina . . . . .	79	110	—	—	560	602	—	—	—	—
Brazil . . . . .	—	—	—	—	22	181	—	—	—	—
India . . . . .	858	401	108	106	10,617	7,075	924	2,249	—	—
Egypt . . . . .	—	—	—	—	5,774	7,185	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	82	119	928	463	1,259	1,640	9,467	8,327	—	—
Austria . . . . .	0	0	44	33	0	0	432	553	—	—
Belgium . . . . .	31	26	205	64	298	348	1,896	1,349	—	—
Denmark . . . . .	—	—	4	9	—	—	143	134	—	—
Spain . . . . .	0	0	320	154	15	22	2,211	2,070	—	—
Estonia . . . . .	0	0	7	4	0	0	60	75	—	—
Finland . . . . .	0	0	13	9	0	0	174	159	—	—
France . . . . .	29	31	562	452	368	494	7,211	4,286	—	—
Gr. Brit. and N. Irel.	71	46	1,332	683	514	485	12,798	12,452	—	—
Greece . . . . .	0	0	7	11	0	0	174	192	—	—
Hungary . . . . .	0	0	37	15	0	0	410	333	—	—
Italy . . . . .	0	0	348	243	0	0	4,178	4,037	—	—
Latvia . . . . .	0	0	9	4	0	0	88	51	—	—
Norway . . . . .	0	0	2	2	0	0	55	44	—	—
Netherlands . . . . .	0	0	75	37	7	7	763	858	—	—
Poland . . . . .	0	2	132	106	15	22	1,228	1,074	—	—
Portugal . . . . .	—	—	—	—	—	—	434	401	—	—
Sweden . . . . .	—	—	40	35	—	—	527	564	—	—
Switzerland . . . . .	0	0	44	31	2	4	571	505	—	—
Czechoslovakia . . . . .	9	11	117	108	106	137	1,768	2,002	—	—
Yugoslavia . . . . .	0	0	26	9	0	0	194	201	—	—
Canada . . . . .	—	—	99	37	—	—	988	974	—	—
Japan . . . . .	29	0	1,380	831	401	1,041	9,806	16,484	—	—
Algeria . . . . .	—	—	—	—	—	—	7	4	—	—
<b>Totals . . . . .</b>	<b>4,945</b>	<b>3,178</b>	<b>5,899</b>	<b>3,488</b>	<b>65,638</b>	<b>66,036</b>	<b>57,160</b>	<b>59,998</b>	—	—

**Wool. — (Thousand lb.).**

COUNTRIES	JULY				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	2,068	1,237	88	143	12,749	9,015	725	818	9,949	948
Hungary . . . . .	320	403	139	139	2,416	1,843	1,506	1,193	2,344	1,285
Argentina . . . . .	30,038	13,863	—	—	314,442	242,093	—	—	254,013	—
Chile . . . . .	1,936	586	—	—	15,353	7,094	—	—	7,956	—
India . . . . .	—	—	—	—	20,342	24,895	—	—	25,175	—
Syria and Lebanon . .	6,398	679	432	467	43,193	31,284	1,090	4,546	35,402	5,020
Algeria . . . . .	655	364	218	20	3,757	3,322	1,272	714	3,935	985
Egypt . . . . .	—	—	—	—	5,816	4,592	1,316	895	6,856	1,252
Un. of S. Africa . . .	690	88	29	0	3,560	1,215	68	2	1,413	4
Australia . . . . .	3,316	7,161	—	0	258,638	292,305	1	0	298,046	0
New Zealand . . . . .	604	439	—	0	6,118	4,780	730	1,239	5,296	1,261
— (a) — (b) —	37,064	26,244	159	9	853,597	755,771	4,112	1,997	762,756	2,008
— (a) — (b) —	8,598	5,809	18	0	71,734	54,203	42	11	58,535	15
— (a) — (b) —	4,678	858	0	0	218,675	176,057	0	2	177,836	2
— (a) — (b) —	8,042	3,256	0	0	61,355	39,796	9	20	45,519	29
<i>Importing Countries:</i>										
Germany . . . . .	121	406	21,508	14,363	3,377	9,588	294,852	224,403	9,780	241,314
Austria . . . . .	825	613	4,453	2,489	7,840	9,013	36,590	28,691	9,681	31,656
Belgium . . . . .	66	2	1,885	664	218	82	17,020	13,034	82	13,982
Denmark . . . . .	6,883	2,573	14,985	6,986	88,589	16,973	186,730	107,489	18,715	116,938
Spain . . . . .	2,641	1,687	558	159	20,933	20,646	3,911	2,698	22,465	3,036
Finland . . . . .	33	4	320	346	269	150	4,709	4,118	157	4,409
France . . . . .	152	73	1,501	1,418	2,264	2,079	10,084	8,988	2,321	12,377
Gr. Brit. and N. Irel.	7	0	366	243	79	84	3,646	2,513	86	2,762
Greece . . . . .	5,778	3,810	33,336	31,621	39,293	42,417	528,027	373,063	45,631	393,121
Italy . . . . .	33,493	19,339	51,238	41,182	390,014	291,172	918,328	857,381	315,628	888,010
Netherlands . . . . .	117	20	179	104	714	165	2,405	1,997	300	2,094
Poland . . . . .	86	108	17,264	8,682	505	1,193	166,796	138,321	1,232	145,252
Sweden . . . . .	520	104	1,321	626	4,458	1,446	14,564	13,345	1,620	14,290
Switzerland . . . . .	112	42	216	137	922	705	2,026	2,167	756	2,355
Czechoslovakia . . . .	560	159	430	511	2,897	1,755	8,049	6,402	1,933	7,229
Yugoslavia . . . . .	130	66	827	785	1,118	692	8,065	7,264	761	8,148
Canada . . . . .	121	71	2,815	1,735	1,323	1,605	33,654	24,994	1,687	27,084
United States . . . . .	—	—	1,241	1,484	—	—	16,350	16,830	—	17,745
Japan . . . . .	40	4	2,068	902	271	386	19,694	18,620	397	20,150
Tunis . . . . .	196	97	3,732	2,138	1,340	1,843	29,390	30,779	1,892	32,038
— (a) — (b) —	11	40	417	101	143	137	3,545	2,604	152	2,937
— (a) — (b) —	2,017	220	880	35	5,324	4,456	9,244	5,842	5,159	6,277
— (a) — (b) —	4	1,351	31,407	849	459	3,360	82,530	82,087	3,904	82,779
— (a) — (b) —	0	0	5,886	5,079	73	77	210,366	183,560	77	192,901
— (a) — (b) —	53	15	71	66	377	159	575	448	172	520
<b>Totals . . . . .</b>	<b>158,373</b>	<b>91,791</b>	<b>199,987</b>	<b>123,483</b>	<b>2,464,545</b>	<b>2,058,448</b>	<b>2,628,020</b>	<b>2,169,075</b>	<b>2,139,619</b>	<b>2,282,213</b>

a) = Wool, greasy; b) = Wool, scoured. — 1) 2) See notes page 644.

COUNTRIES	JULY		TWELVE MONTHS (July 1-June 30)		COUNTRIES	JULY		TWELVE MONTHS (July 1-June 30)		TWELVE MONTHS (July 1-June 30)	
	1933	1932	1932-33	1931-32		1933	1932	1932-33	1931-32		
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
EXPORTS.						EXPORTS.					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1,605,808	2,021,602	—	Ceylon . . . . .	16,413	19,595	241,791	245,982	—
India . . . . .	754	44	18,600	17,926	—	India . . . . .	26,766	34,297	367,333	342,950	—
Java and Madura . . . . .	6,210	9,722	80,943	51,672	—	Java and Madura . . . . .	6,479	12,586	156,888	161,652	—
						Japan . . . . .	2,498	2,469	29,736	24,590	—
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	20	254	1,310	1,649	—	Belgium . . . . .	0	2	9	22	—
Belgium . . . . .	20	84	410	9,654	—	Irish Free State . . . . .	2	4	31	258	—
France . . . . .	0	0	128	15	—	France . . . . .	2	0	15	35	—
Netherlands . . . . .	745	1,014	16,261	14,709	—	Gr. Brit. and N. Irel. . . . .	7,729	7,436	82,228	80,092	—
Portugal . . . . .	...	...	2,004	1,270	—	Netherlands . . . . .	18	9	128	143	—
Switzerland . . . . .	37	26	320	613	—	United States . . . . .	18	22	298	474	—
Canada . . . . .	7	4	51	42	—	Syria and Lebanon . . . . .	0	0	2	20	—
United States . . . . .	3,038	1,343	13,358	22,593	—	Algeria . . . . .	...	...	2)	33	2)
Ceylon . . . . .	0	0	7	11	—	Union of S. Africa . . . . .	...	...	20	121	—
Syria and Lebanon . . . . .	0	2	11	46	—	Australia . . . . .	79	51	791	549	—
Australia . . . . .	2	2	46	55	—	New Zealand . . . . .	...	...	2)	99	2)
TOTALS . . . . .	—	—	—	—	—	TOTALS . . . . .	60,004	76,471	879,402	857,007	—
IMPORTS.						IMPORTS.					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	27,353	26,694	279,327	307,608	—	Germany . . . . .	785	882	10,102	10,490	—
Austria . . . . .	1,290	2,421	13,104	17,410	—	Austria . . . . .	40	152	888	1,138	—
Belgium . . . . .	8,373	8,547	95,921	114,725	—	Belgium . . . . .	26	29	597	661	—
Bulgaria . . . . .	77	46	919	1,658	—	Denmark . . . . .	62	75	1,265	1,380	—
Denmark . . . . .	4,480	1,938	49,022	66,439	—	Spain . . . . .	31	40	289	280	—
Spain . . . . .	4,513	3,708	43,385	50,224	—	Estonia . . . . .	7	2	71	172	—
Estonia . . . . .	26	2	101	298	—	Irish Free State . . . . .	1,387	1,603	22,836	25,122	—
Irish Free State . . . . .	24	15	584	522	—	Finland . . . . .	15	13	223	249	—
Finland . . . . .	3,025	2,476	33,819	32,481	—	France . . . . .	800	227	3,199	3,419	—
France . . . . .	33,045	32,000	424,502	427,557	—	Gr. Britain and N. Ireland . . . . .	28,019	40,675	572,897	550,364	—
Gr. Britain and N. Ireland . . . . .	3,115	3,347	35,404	36,648	—	Greece . . . . .	11	18	353	699	—
Greece . . . . .	924	717	7,976	13,010	—	Hungary . . . . .	18	31	547	562	—
Hungary . . . . .	373	547	5,818	6,041	—	Italy . . . . .	13	9	265	333	—
Italy . . . . .	6,863	6,812	84,581	93,366	—	Latvia . . . . .	4	9	117	130	—
Latvia . . . . .	4	9	324	375	—	Lithuania . . . . .	0	7	121	119	—
Lithuania . . . . .	35	29	373	445	—	Norway . . . . .	29	29	381	386	—
Norway . . . . .	3,261	2,388	35,944	38,189	—	Netherlands . . . . .	2,432	2,352	30,069	30,836	—
Netherlands . . . . .	8,113	6,230	97,738	103,371	—	Poland . . . . .	300	271	3,922	4,317	—
Poland . . . . .	1,453	1,299	15,296	17,185	—	Portugal . . . . .	...	...	423	648	—
Portugal . . . . .	...	...	10,936	10,657	—	Sweden . . . . .	42	49	875	858	—
Sweden . . . . .	5,262	6,634	99,449	107,586	—	Switzerland . . . . .	104	134	2,097	1,792	—
Switzerland . . . . .	2,024	2,494	37,168	34,286	—	Czechoslovakia . . . . .	18	57	1,321	1,737	—
Czechoslovakia . . . . .	1,867	2,097	25,441	32,386	—	Yugoslavia . . . . .	24	24	419	622	—
Yugoslavia . . . . .	1,259	1,138	14,207	17,434	—	Canada . . . . .	1,903	1,376	38,480	39,031	—
Canada . . . . .	2,253	2,321	30,003	31,963	—	United States . . . . .	8,909	6,279	94,810	90,460	—
United States . . . . .	114,178	88,538	1,458,438	1,628,862	—	Chile . . . . .	...	...	3,834	5,170	—
Chile . . . . .	...	...	3,979	9,308	—	Syria and Lebanon . . . . .	13	9	198	586	—
Ceylon . . . . .	679	132	2,513	3,572	—	Turkey . . . . .	...	...	2,341	1,504	—
Japan . . . . .	399	77	4,332	6,724	—	Algeria . . . . .	...	...	2)	3,836	2)
Syria and Lebanon . . . . .	198	82	2,218	2,324	—	Egypt . . . . .	1,230	1,775	16,290	13,999	—
Turkey . . . . .	...	...	10,677	8,841	—	Tunis . . . . .	183	273	2,654	6,669	—
Algeria . . . . .	...	...	28,089	28,019	—	Union of S. Africa . . . . .	...	...	11,605	12,683	—
Egypt . . . . .	1,790	1,376	16,193	15,853	—	Australia . . . . .	5,289	4,076	48,434	44,899	—
Tunis . . . . .	247	353	3,501	3,190	—	New Zealand . . . . .	...	...	2)	12,789	2)
Un. of S. Africa . . . . .	...	...	27,276	26,026	—						
Australia . . . . .	273	139	3,578	3,510	—						
New Zealand . . . . .	...	...	302	412	—						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	44	110	106	—	India . . . . .	295	322	5,518	6,486	—
						Java and Madura . . . . .	...	...	4,771	9,771	—
TOTALS . . . . .	236,776	204,650	3,002,598	3,298,611	—	TOTALS . . . . .	51,989	60,798	898,837	879,682	—

2) See notes page 644.

COUNTRIES	JULY		TEN MONTHS (Oct. 1-July 31)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	JULY		TWELVE MONTHS (August 1-July 31)		TWELVE MONTHS (August 1- July 31)	
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32	
Cacao. — (Thousand lb.).						Total Wheat and Flour *)						
EXPORTS.						(Thousand cents).						
Exporting Countries:						a) NET EXPORTS.						
Grenada . . . . .	...	...	5) 3,042	5) 4,941	9,656	Bulgaria . . . . .	174	179	1,947	6,691	—	
Dominican Republ. . . . .	...	...	1) 33,676	1) 31,462	35,977	Spain . . . . .	2	6)	11	6)	—	
Brazil . . . . .	...	...	1) 182,596	1) 152,069	210,683	Hungary . . . . .	359	123	4,405	10,752	—	
Ecuador . . . . .	...	...	2) 15,607	2) 28,164	35,689	Lithuania . . . . .	2	2	35	55	—	
Trinidad . . . . .	3,040	2,158	45,459	34,705	39,617	Poland . . . . .	128	203	683	1,929	—	
Venezuela . . . . .	...	...	4) 16,976	4) 10,748	35,439	Rumania . . . . .	...	...	1)	31)	22,271	
Ceylon . . . . .	412	143	7,568	8,812	9,266	U. S. S. R. . . . .	...	...	2)	8) 9,489	2)	39,483
Java and Madura . . . . .	597	778	2,068	2,698	3,788	Yugoslavia . . . . .	2	121	580	8,935	—	
Cameron . . . . .	1,301	734	34,584	24,624	27,315	Canada . . . . .	11,103	12,932	156,745	123,625	—	
Ivory Coast . . . . .	...	...	1) 60,473	1) 50,927	54,578	United States . . . . .	207	2,304	17,209	65,566	—	
Gold Coast . . . . .	35,393	17,132	492,444	430,871	462,878	Argentina . . . . .	8,801	1,821	78,425	84,177	—	
Nigeria . . . . .	4,189	7,405	147,263	112,568	123,929	Chile . . . . .	...	...	6)	1)	35	
St. Thomas and	...	...	...	...	...	India . . . . .	40	49	6)	1,118	—	
Prince Is. . . . .	...	...	3) 11,039	3) 13,360	25,867	Japan . . . . .	6)	128	6)	6)	—	
Togoland . . . . .	1,237	388	14,264	13,673	13,916	Turkey . . . . .	...	...	1)	174)	917	
						Algeria . . . . .	...	...	2)	4,389	2)	2,097
Importing Countries:						Tunis . . . . .	489	1,464	3,201	5,104	—	
Germany . . . . .	37	0	82	474	496	Australia . . . . .	5,421	4,943	88,935	92,453	—	
Belgium . . . . .	0	108	459	1,027	1,508	TOTALS . . . . .	26,728	24,269	366,259	465,208	—	
France . . . . .	0	0	66	2	4							
Netherlands . . . . .	368	664	3,325	5,525	6,740							
United States . . . . .	683	271	8,722	6,219	7,011							
Australia . . . . .	44	0	201	141	143							
TOTALS . . . . .	47,301	29,781	1,079,914	933,010	1,104,500							
IMPORTS.						b) NET IMPORTS.						
Importing Countries:						Importing Countries:						
Germany . . . . .	14,343	11,773	147,186	155,087	175,744	Germany . . . . .	1,069	3,393	3,012	13,913	—	
Austria . . . . .	955	1,559	6,669	11,733	13,651	Austria . . . . .	624	584	7,950	8,091	—	
Belgium . . . . .	836	1,144	13,664	19,765	21,588	Belgium . . . . .	1,556	2,617	23,559	27,935	—	
Bulgaria . . . . .	0	53	608	1,206	1,323	Denmark . . . . .	597	597	7,220	10,412	—	
Denmark . . . . .	408	547	7,729	7,214	7,756	Spain . . . . .	7)	1,523	7)	3,027	—	
Spain . . . . .	2,196	811	21,182	18,336	19,701	Estonia . . . . .	0	0	0	265	—	
Estonia . . . . .	44	4	344	441	452	Irish Free State . . . . .	668	913	10,726	11,720	—	
Irish Free State . . . . .	106	49	2,621	979	1,149	Finland . . . . .	243	229	2,573	2,555	—	
Finland . . . . .	11	13	163	146	181	France . . . . .	1,484	4,672	21,204	46,247	—	
France . . . . .	6,568	8,625	81,152	79,065	91,201	Gr. Brit. and N. Irel. . . . .	10,520	11,411	129,134	143,918	—	
Gr. Brit. and N. Irel. . . . .	10,274	9,526	133,435	118,082	138,407	Greece . . . . .	1,030	922	11,819	14,204	—	
Greece . . . . .	282	20	1,944	2,610	2,844	Italy . . . . .	291	1,680	6,684	19,959	—	
Hungary . . . . .	600	624	5,470	4,661	5,573	Latvia . . . . .	0	152	15	575	—	
Italy . . . . .	1,071	858	14,590	12,820	15,053	Norway . . . . .	494	276	5,060	5,093	—	
Latvia . . . . .	119	115	1,045	1,451	1,607	Netherlands . . . . .	1,951	1,484	16,319	18,636	—	
Lithuania . . . . .	60	0	646	498	615	Portugal . . . . .	...	...	1)	761)	873	
Norway . . . . .	64	161	3,219	4,760	5,033	Sweden . . . . .	57	289	1,938	4,096	—	
Netherlands . . . . .	6,984	4,359	91,263	80,985	92,202	Switzerland . . . . .	8)	908	1,021	11,457	8)	12,666
Poland . . . . .	1,376	860	12,641	9,758	11,444	Czechoslovakia . . . . .	1,645	1,230	7,165	14,758	—	
Portugal . . . . .	...	...	765	717	855	Chile . . . . .	...	...	1)	1,210	7)	—
Sweden . . . . .	390	340	7,247	10,148	10,921	Ceylon . . . . .	37	29	511	536	—	
Switzerland . . . . .	1,292	463	15,664	10,523	11,197	India . . . . .	7)	7)	564	7)	—	
Czechoslovakia . . . . .	1,429	1,378	15,446	17,977	21,526	Indo-China . . . . .	42	35	456	518	—	
Yugoslavia . . . . .	101	130	1,030	1,274	1,501	Japan . . . . .	207	7)	3,563	12,584	—	
Canada . . . . .	2,954	1,177	17,569	14,522	16,444	Java and Madura . . . . .	...	...	1)	1,191)	1,413	
United States . . . . .	40,764	21,314	432,705	357,124	420,295	Syria and Lebanon . . . . .	62	64	913	223	—	
Japan . . . . .	77	64	1,865	1,808	1,960	Egypt . . . . .	7	99	271	4,231	—	
Australia . . . . .	386	520	9,423	9,138	11,252	Union of S. Africa . . . . .	...	...	1)	165)	1,014	
New Zealand . . . . .	...	...	2) 1,781	2) 1,076	1,554	New Zealand . . . . .	...	...	2)	833)	381	
TOTALS . . . . .	93,690	66,487	1,049,064	953,904	1,103,029	TOTALS . . . . .	23,492	33,220	276,273	379,843	—	

\*) Flour reduced to grain on the basis of the coefficient: 1,000 cents of flour = 1,333.33 cents of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 30 June. — 2) Data up to 31 May. — 3) Data up to 30 April. — 4) Data up to 31 March. — 5) Data up to 28 February. — 6) See Net Imports. — 7) See Net Exports. — 8) Wheat only.

## STOCKS

CARRY-OVER OF WHEAT IN CANADA ON 31st JULY.

LOCATION	1) 1933	1) 1932	1931	1) 1933	1) 1932	1931
	1,000 centals			1,000 bushels		
On farms . . . . .	7,404	4,498	11,675	12,340	7,469	19,459
In country and interior terminal elevators, western division . . . . .	44,310	16,561	18,139	73,850	27,601	30,232
In terminal elevators Lake Superior 2). . . . .	36,817	29,210	27,421	61,361	48,683	45,702
In elevators Pacific Coast 3) . . . . .	5,613	5,823	5,750	9,355	9,705	9,583
In elevators Hudson Bay 4) . . . . .	1,458	1,375	—	2,430	2,291	—
In eastern elevators . . . . .	20,503	10,704	8,607	34,172	17,840	14,345
In flour mills . . . . .	5,524	5,342	4,489	9,207	8,906	7,481
In transit (afloat for unloading at Can. ports or on railways) . . . . .	5,415	5,594	4,366	9,025	9,323	7,277
TOTAL Canadian wheat as grain . . . . .	127,044	79,107	80,447	211,740	131,845	134,079
U. S. grain in store in Canada . . . . .	2,244	9,218	13,760	3,740	15,364	22,933
TOTAL WHEAT AS GRAIN IN CANADA . . . . .	129,288	88,325	94,207	215,480	147,209	157,012

1) Provisional data. — 2) Port William and Port Arthur. — 3) Vancouver, New Westminster, Victoria, Prince Rupert. — 4) Churchill.

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Canadian in Canada . . . . .	119,371	117,964	119,408	69,450	59,684	198,952	196,607	199,013	115,750	99,473
U. S. in Canada . . . . .	2,203	2,244	2,428	7,288	19,342	3,672	3,740	4,047	12,147	32,236
U. S. in the United States . . . . .	91,043	80,968	74,158	113,014	157,045	151,738	134,946	123,596	188,357	261,742
Canada in the United States . . . . .	2,871	4,018	3,022	3,347	3,736	4,785	6,697	5,036	5,579	6,227
Total . . . . .	215,488	205,194	199,016	193,099	239,807	359,147	341,990	331,692	321,833	399,678
RYE:										
Canadian in Canada . . . . .	3,060	3,125	2,959	2,685	6,862	5,464	5,581	5,284	5,116	12,254
U. S. in Canada . . . . .	0	1	1	68	994	0	1	1	121	1,775
U. S. in the United States . . . . .	6,719	6,313	5,919	5,070	5,267	11,998	11,273	10,570	9,053	9,446
Canada in the United States . . . . .	158	108	119	231	1	283	192	213	412	2
Total . . . . .	9,937	9,547	8,998	8,234	13,124	17,745	17,047	16,068	14,702	23,437
BARLEY:										
Canadian in Canada . . . . .	4,280	3,712	3,337	1,395	3,537	8,917	7,733	6,952	2,907	7,368
U. S. in Canada . . . . .	0	0	10	10	12	0	0	21	20	24
U. S. in the United States . . . . .	8,628	7,002	5,611	3,195	3,404	17,975	14,587	11,690	6,657	7,091
Canada in the United States . . . . .	0	0	0	1	1	0	0	0	2	3
Total . . . . .	12,908	10,714	8,958	4,601	6,954	26,892	22,320	18,663	9,586	14,486
OATS: (1)										
Canadian in Canada . . . . .	4,590	4,166	3,505	1,952	2,580	14,345	13,018	10,952	6,100	8,061
U. S. in Canada . . . . .	312	225	230	364	37	975	702	719	1,137	1,117
U. S. in the United States . . . . .	14,782	11,388	8,820	8,752	4,799	46,193	35,589	27,564	27,351	14,997
Canada in the United States . . . . .	0	0	0	0	13	0	0	0	0	41
Total . . . . .	19,684	15,779	12,555	11,068	7,429	61,513	49,309	39,235	34,588	23,216
MAIZE:										
U. S. in Canada . . . . .	3,963	3,985	1,863	273	312	7,076	7,116	3,326	487	557
Of other origin in Canada . . . . .	323	466	507	321	160	576	832	905	573	285
U. S. in the United States . . . . .	32,348	35,433	25,838	8,254	5,075	57,764	63,274	46,140	14,740	9,063
Total . . . . .	36,634	39,884	28,208	8,848	5,547	65,416	71,222	50,371	15,800	9,905

1) For oats the bushel is of 32 lb.

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of grain) . . . . .	20,818	18,970	18,984	14,712	28,147	34,696	31,616	31,640	24,520	46,912
Rye. . . . .	782	706	648	106	667	1,397	1,260	1,157	189	1,191
Barley. . . . .	2,112	2,112	2,696	2,056	3,544	4,808	4,400	5,617	4,283	7,383
Oats . . . . .	666	534	890	851	1,274	2,080	1,670	2,780	2,620	3,980
Maize . . . . .	16,150	13,474	12,821	14,549	23,506	19,911	24,060	22,894	25,980	41,974

Authority: Broomhall's Corn Trade News.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	August 1933	July 1933	June 1933	August 1932	August 1933	July 1933	June 1933	August 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	13,395	7,789	10,232	8,589	22,325	12,981	17,052	14,315
Flour for bread . . . . .	2,410	2,632	2,652	1,795	1,229	1,343	1,353	916
TOTAL 2) . . . . .	16,607	11,299	13,768	10,981	27,678	18,831	22,945	18,305
RYE:								
Grain . . . . .	14,522	6,982	9,004	9,872	25,932	12,468	16,078	17,629
Flour for bread . . . . .	1,254	917	1,199	926	640	468	612	472
TOTAL 2) . . . . .	16,195	8,206	10,602	11,107	28,919	14,652	18,934	19,832
BARLEY . . . . .	3,710	2,180	1,138	2,432	7,730	4,543	2,370	5,066
OATS . . . . .	939	708	1,153	849	2,935	2,212	3,603	2,652

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

## CARRY-OVER OF WHEAT AND WHEAT-FLOUR FOR BREAD IN FRANCE ON 31 JULY, 1933.

LOCATION	Wheat in the grain	Wheat- flour	Wheat in the grain	Wheat- flour
	1,000 centals		1,000 bushels	1,000 barrels
In farmers' hands. . . . .	12,599	15	20,998	8
In mills and mill elevators . . . . .	7,641	2,190	12,735	1,117
In merchants' hands and other positions . . . . .	6,029	3,769	10,048	1,923
TOTAL . . . . .	27,269	5,974	43,781	3,048
GRAND TOTAL (flour as grain) 1) . . . . .	34,804	—	58,004	—

1) On the basis 100 lb. of wheat = 70 lb. of flour (1 barrel of flour =  $4\frac{1}{2}$  bushels of wheat).



GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First day of the month					First day of the month				
	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	5,640	5,856	6,816	4,392	7,392	9,400	9,760	11,360	7,320	12,320
Flour as grain . .	504	792	576	600	672	840	1,320	960	1,000	1,120
TOTAL . . . . .	6,144	6,648	7,392	4,992	8,064	10,240	11,080	12,320	8,320	13,440
Barley . . . . .	580	560	640	300	420	1,208	1,167	1,333	625	875
Oats . . . . .	464	560	528	336	672	1,450	1,750	1,650	1,050	2,100
Malze . . . . .	3,312	2,760	2,712	2,976	2,640	5,914	4,929	4,843	5,314	4,714

1) Imported cereals.

Authority: *Broomhall's Corn Trade News*.

STOCKS OF COTTON ON HAND IN THE UNITED STATES.

LOCATION	Last day of the month					Last day of the month				
	August 1933	July 1933	June 1933	August 1932	August 1931	August 1933	July 1933	June 1933	August 1932	August 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming estab- lishments . . . .	5,701	6,640	6,885	5,357	4,122	1,160	1,351	1,401	1,090	840
In public storage and at compresses . .	28,463	28,231	31,085	32,209	21,772	5,786	5,739	6,319	6,548	4,426
TOTAL . . . . .	34,164	34,871	37,970	37,566	25,894	6,946	7,090	7,720	7,638	5,266

STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bales (1 bale = 478 lb.)				
Bombay 1) . . . .	2,876	3,272	3,508	2,995	2,160	602	685	734	627	452
Alexandria . . . .	1,706	2,352	2,801	3,326	4,030	357	492	586	696	843

1) Stocks held by exporters, dealers and mills.

Authorities: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal*.

COTTON STOCKS AT ALEXANDRIA ON 31ST AUGUST, ACCORDING TO VARIETIES.

DESCRIPTIONS	1933	1932	1931	1933	1932	1931
	1,000 centals			1,000 bales (1 bale = 478 lb.)		
Sakellaridis . . . . .	728	1,315	1,899	152	275	397
Ashmuni-Zagora . . . . .	805	1,601	1,851	169	335	387
Pilion . . . . .	24	115	160	5	24	34
Other varieties . . . . .	149	221	120	31	46	25
TOTAL . . . . .	1,706	3,252	4,030	357	680	843

Authority: *Commission de la Bourse de Minet-el-Bassal*.

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931	Sept. 1933	August 1933	July 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bales (1 bale = 478 lb.)				
<i>Great Britain:</i>										
American . . . . .	2,175	2,178	2,066	1,801	1,691	455	456	432	377	354
Argentine, Brazil- ian, etc. . . . .	120	119	101	131	226	25	25	21	27	47
Peruvian, etc. . . . .	276	176	149	309	272	58	36	31	65	57
East Indian, etc.	307	333	282	293	683	64	70	59	61	143
Egyptian, Sudan- ese . . . . .	1,233	1,208	1,255	1,454	1,334	258	253	263	304	279
Other 1) . . . . .	236	229	243	110	253	49	48	51	23	53
TOTAL . . . . .	4,347	4,243	4,096	4,098	4,459	909	888	857	857	933
<i>Bremen:</i>										
American . . . . .	2,075	2,270	2,402	1,322	1,318	434	475	502	277	276
Other . . . . .	120	84	71	44	81	25	18	15	9	17
TOTAL . . . . .	2,195	2,354	2,473	1,366	1,399	459	493	517	286	293
<i>Le Havre:</i>										
American . . . . .	762	917	890	562	1,039	159	192	186	118	217
Other . . . . .	47	50	38	58	196	11	10	8	12	41
TOTAL . . . . .	809	967	928	620	1,235	170	202	194	130	258
<i>Total Continent 2):</i>										
American . . . . .	3,550	3,928	4,114	2,448	2,687	743	822	860	512	562
Argentine, Brazil- ian, etc. . . . .	41	33	32	36	110	9	7	7	8	23
E. Indian, Austral- ian, etc. . . . .	198	186	141	73	202	41	39	29	15	42
Egyptian . . . . .	113	109	109	134	110	24	23	23	28	23
W. Indian, E. Afri- can, E. Afri- can, etc. . . . .	35	31	32	36	56	7	6	7	8	12
TOTAL . . . . .	3,937	4,287	4,428	2,727	3,165	824	897	926	571	662

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports  
Authority: *Liverpool Cotton Ass.*

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

On page 659 the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data a summary table are given below.

## Percentage variations in the index-numbers for August, 1933.

COUNTRIES	compared with those for July, 1933		compared with those for August, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 1.3	+ 0.3	— 3.6	— 1.3
England and Wales . . . . .	+ 4.0	— 0.6	0.0	+ 0.6
Argentina . . . . .	— 4.4	—	— 1.5	—
Canada . . . . .	— 5.2	— 1.6	+ 18.0	+ 3.9
United States . . . . . { a) b)	— 5.3 — 4.2	— + 0.9	+ 22.0 + 17.3	— + 6.6
Finland . . . . .	0.0	0.0	+ 4.2	+ 1.1
Hungary . . . . .	— 5.3	— 2.7	— 32.5	— 20.2
Italy . . . . .	+ 2.9	— 0.3	— 16.5	— 5.9
New Zealand . . . . .	+ 5.1	—	+ 7.7	—
Netherlands . . . . .	+ 4.1	—	+ 4.1	—
Poland . . . . .	— 15.1	— 7.1	— 12.5	— 10.5
Yugoslavia . . . . . { c) d)	— 15.1 + 3.0	— — 4.7	{ c) d) + 3.7	{ — 3.0

a) Bureau of Agricultural Economics. — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise stated, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	15	8	1	25	AVERAGE 1)				
	Sept.	Sept.	Sept.	August	August	Sept.	Sept.	Commercial	
	1933	1933	1933	1933	1933	1932	1931	1932-33	1931-32
<b>WHEAT.</b>									
Budapest: Tisza region (78 kg. hl.; pengő p. quintal) . . . . .	8.00	8.22	8.47	8.60	9.08	13.97	9.25	13.73	12.22
Braila: Good quality (lei p. quintal) . . . . .	400	380	365	7) 350	7) 352	479	274	n. 535	305
Winnipeg: No. 1 Manitoba (cents p. 60 lb.) . . . . .	66 <sup>3</sup> / <sub>8</sub>	69 <sup>1</sup> / <sub>8</sub>	69 <sup>3</sup> / <sub>8</sub>	69 <sup>3</sup> / <sub>8</sub>	73 <sup>1</sup> / <sub>2</sub>	51 <sup>3</sup> / <sub>4</sub>	*) 53	54 <sup>1</sup> / <sub>4</sub>	59 <sup>3</sup> / <sub>4</sub>
Chicago: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	89 <sup>3</sup> / <sub>8</sub>	n. 82 <sup>1</sup> / <sub>2</sub>	n. 88	n. 85 <sup>1</sup> / <sub>2</sub>	91 <sup>1</sup> / <sub>2</sub>	53 <sup>7</sup> / <sub>8</sub>	n. 50 <sup>1</sup> / <sub>2</sub>	59 <sup>1</sup> / <sub>4</sub>	54 <sup>3</sup> / <sub>4</sub>
Minneapolis: No. 1 Northern (cent p. 60 lb.) . . . . .	89 <sup>7</sup> / <sub>8</sub>	84 <sup>3</sup> / <sub>8</sub>	85 <sup>3</sup> / <sub>4</sub>	88 <sup>1</sup> / <sub>8</sub>	91 <sup>3</sup> / <sub>8</sub>	55 <sup>3</sup> / <sub>8</sub>	67 <sup>1</sup> / <sub>2</sub>	60 <sup>3</sup> / <sub>8</sub>	66 <sup>7</sup> / <sub>8</sub>
New-York: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	100	94	96 <sup>3</sup> / <sub>8</sub>	98 <sup>1</sup> / <sub>2</sub>	101 <sup>1</sup> / <sub>8</sub>	62 <sup>3</sup> / <sub>8</sub>	62 <sup>3</sup> / <sub>8</sub>	68 <sup>3</sup> / <sub>8</sub>	66 <sup>7</sup> / <sub>8</sub>
Buenos Aires b): Barilletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	6.15	6.20	6.15	6.15	6.37	7.03	5.95	6.09	6.68
Karachi: Karachi white, 2% barley, 1 1/2% dirt (rupees p. 656 lb.) . . . . .	23-7-0	23-13-0	23-14-0	24-10-0	24-10-9	28-15-7	*) 17-2-0	28-4-2	21-15-6
Berlin: Home grown (Rm. p. quint.) . . . . .	17.80	17.60	17.40	*) 17.40	*) 17.42	20.84	21.45	19.60	23.63
Hamburg, c. i. f. (Rm. p. quint.):									
No. 2 Manitoba . . . . .	8.14	8.33	8.41	8.53	9.39	9.25	*) 10.58	8.83	10.38
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	*) n. 10.07	8.52	n. q.	n. 9.32
Barusso 2) . . . . .	7.21	7.48	7.36	7.38	7.87	8.99	8.19	7.76	8.78
Antwerp (francs p. quintal):									
Home grown . . . . .	7) 64.00	7) 64.00	7) 64.00	7) 64.00	11) 81.50	72.80	91.25	79.70	83.10
No. 2 Hard Winter, Gulf . . . . .	n. q.	n. q.	n. q.	n. q.	84.50	83.00	73.25	77.70	81.75
Paris: Home-grown, 75-77 kg. (francs p. quintal) (3) . . . . .	n. 116.50	n. 116.50	n. 116.50	n. 115.00	n. 115.00	117.25	166.30	107.35	167.10
London: Home grown (sh. p. 504 lb.) (4) . . . . .	21/3	20/6	20/-	7) 20/-	7) 22/1	24/5	7) 19/6	24/8 1/2	26/5
London and Liverpool, c. i. f., parcels, shipping current month (sh. p. 480 lb.):									
German (on sample) . . . . .	18/6	19/3	18/9	17/9	19/7	25/5 1/2	*) 16/9 1/2	n. 23/8	n. 21/3
South Russian (on sample) . . . . .	22/-	23/6	23/-	n. 21/6	24/6 3/4	n. 26/10	*) 17/3	n. 26/3	22/3
No. 1 Manitoba . . . . .	26/4 1/2	27/6	27/6	n. 26/10 1/2	29/5	27/2	*) 21/9 1/2	26/4	28/10
No. 3 Manitoba . . . . .	25/-	26/6	25/9	n. 24/10 1/2	27/3 1/4	26/2	*) 18/1	25/3	25/9
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	*) n. 27/10	*) 18/3	n. q.	25/3
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. 28/9	*) 19/8	n. q.	n. q.	26/5
Rosafé (float) 5) . . . . .	21/6	22/3	22/-	21/-	22/10 1/2	27/1	*) 16/11	23/2	23/8
Australian . . . . .	24/9	25/3	25/7 1/2	n. 24/3	26/4 1/2	28/9	*) 19/2	25/7	25/9
Milan (a): Home-grown, soft, "Buono mercantile", (76-78 kg. p. hl.; lire p. quint.) . . . . .	82.50	82.50	82.50	7) 83.50	7) 83.85	104.00	94.25	101.80	106.20
Genoa c. i. f.: Plate (U. S. \$ p. quint.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. 2.14	n. q.	n. 1.85	n. 2.21
<b>RYE.</b>									
Budapest: Home-grown (pengő p. quintal) . . . . .	4.60	4.85	4.55	4.85	5.38	7.31	9.02	6.77	12.24
Berlin: Home-grown (Rm. p. quint.) . . . . .	14.30	14.30	14.20	7) 14.10	7) 14.12	16.10	18.14	15.52	19.00
Hamburg, c. i. f. (Rm. p. quint.):									
La Plata (74-75 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	6.82	n. q.	n. 6.40	n. 9.50
La Plata (74-75 kg. p. hl.) 6) . . . . .	5.47	5.58	5.58	5.60	5.84	n. q.	n. q.	5.98	8.36
Minneapolis: No. 2 (cents p. 56 lb.) . . . . .	72	69	74	75	70 <sup>1</sup> / <sub>8</sub>	34	39 <sup>3</sup> / <sub>8</sub>	41 <sup>3</sup> / <sub>8</sub>	42 <sup>3</sup> / <sub>8</sub>
Groningen (d): Home-grown (fl. p. quint.) . . . . .	3.30	3.30	3.12 1/2	n. q.	3.12 1/2	4.12	4.58	3.92	5.13
<b>BARLEY.</b>									
Braila: Average quality (lei p. quintal) . . . . .	134	132	132	130	144	205	189	186	263
Winnipeg: No. 4 Western (cents p. 48 lb.) . . . . .	32 1/4	n. q.	37 <sup>3</sup> / <sub>8</sub>	37 <sup>7</sup> / <sub>8</sub>	40 <sup>7</sup> / <sub>8</sub>	28 <sup>1</sup> / <sub>4</sub>	*) 29 <sup>1</sup> / <sub>4</sub>	29 <sup>3</sup> / <sub>8</sub>	34 <sup>7</sup> / <sub>8</sub>
Chicago: Feeding, (cents p. 48 lb.) . . . . .	44	46	46	56	44 <sup>1</sup> / <sub>8</sub>	27 <sup>1</sup> / <sub>4</sub>	44	33 <sup>3</sup> / <sub>8</sub>	43 <sup>3</sup> / <sub>8</sub>
Minneapolis: Feeding, lower grades (cents p. 48 lb.) . . . . .	51	47	48	51	45 <sup>1</sup> / <sub>4</sub>	22 <sup>3</sup> / <sub>4</sub>	36 <sup>1</sup> / <sub>8</sub>	27 <sup>1</sup> / <sub>8</sub>	38 <sup>3</sup> / <sub>8</sub>
Berlin: Home-grown fodder (Rm. p. quint.) . . . . .	15) 15.20	15) 15.00	15) 15.00	n. q.	n. q.	16.95	15.44	16.55	16.41
Antwerp: Danubian (francs p. quint.) . . . . .	42.00	43.00	44.00	45.00	48.85	62.10	69.75	55.50	77.25
London: English malting (sh. p. 448 lb.) 4) . . . . .	45/-	45/-	45/-	7) 45/-	7) 46/3	35/-	*) 40/-	35/-	39/4
London and Liverpool, c. i. f., parcels (shillings per 400 lb.):									
Danubian 3) . . . . .	13 -	13/4 1/2	13/3	12/7 1/2	13/7 1/2	17/11	*) 13/3	n. 16/7	n. q.
Russian (Azoff-Black sea) . . . . .	13/-	13/4 1/2	13/1 1/2	12/7 1/2	13/9 1/2	17/5	*) 13/3	n. 16/5	18/11
Canadian Western, N. 3 . . . . .	16/9	18/-	18/4 1/2	n. q.	21/1 1/2	19/-	*) 15/4	18/3	20/11
Californian malting (sh. p. 448 lb.) . . . . .	n. q.	n. q.	n. 26/-	7) n. 26/-	7) n. 26/-	21/7	*) 30/-	22/8	33/4
Groningen (d): Home grown winter (fl. p. q.) . . . . .	5.47 1/2	5.20	5.40	5.12 1/2	4.42	4.98	5.01	4.40	5.87

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) August 1931-Jan. 1932: 79 kg. p. hl.; Feb.-Dec. 1932: 80 kg.; afterwards: 79 kg. — 3) From 15 July 1933: minimum prices fixed in the Wheat law. — 4) From August: price at the farm. — 5) August-Nov. 1931: 63 lb. p. bushel; Dec. 1931: 63 1/2 lb.; Jan.-Dec. 1932: 64 lb.; afterwards: 63 1/2 lb. — 6) From November 1932: 72-73 kg. p. hl. — 7) New crop. — 8) Average of the first 3 weeks. — 9) No. 1 Man. — 10) No. 1 H. W. — 11) Old crop. — 12) 18 Aug. 20/6; 11 Aug. 21/6; 4 Aug. 26/6 — 13) Spring barley, average quality. — 14) 18 and 11 Aug. 45/-; 4 Aug. 50/-.

PRODUCTS, MARKETS AND DESCRIPTION	15	8	1	25	AVERAGE 1)					Commercial Season	
	Sept.	Sept.	Sept.	August	August	Sept.	Sept.			1932-33	1931-32
	1933	1933	1933	1933	1933	1932	1931				
OATS											
Braila: Good quality (1c1 p. quintal) . . . . .	n. q.	n. q.	n. q.	n. q.	146	205	229	n. 195	285		
Winnipeg: No. 2 White (cents per 34 lb.)	33 3/4	n. q.	37 3/8	38 1/8	38 3/4	26	27 1/2	26 1/2	31 3/8		
Chicago: No. 2 White (cents per 32 lb.)	37 3/4	35	38 1/2	36 1/2	38 1/4	17 3/4	23 7/8	21 1/2	24 1/8		
Buenos Aires a): Current quality (pesos paper p. quintal) . . . . .	3.95	3.95	3.85	3.80	3.97	5.60	4.77	4.43	5.33		
Berlin: Home grown (Rm. p. quint.) . . . . .	13.25	12.85	13.80	13.70	13.70	13.85	13.81	13.05	15.10		
Paris: Home grown, black and other (francs p. quintal) . . . . .	51.00	51.25	54.00	50.00	53.60	86.70	85.75	76.30	101.75		
London: Home grown white (sh.p. 336 lb.)	16/6	16/6	15/6	15/6	15/5	19/-	15/8	18/6	21/3		
London and Liverpool c. i. f., parcels (shillings p. 320 lb.):											
German (on sample) . . . . .	13/-	12/-	12/-	11/9	n. 12/1	n. q.	n. q.	n. q.	n. q.		
Danubian (39-40 lb. p. bush.) . . . . .	10/9	11/-	11/-	10/7 1/2	n. 10/11	14/10	n. q.	n. 14/3	n. q.		
Plate (f.a.q.) . . . . .	11/9	11/9	11/4 1/2	11/1 1/2	11/5 1/2	15/4	11/3	12/9	14/5		
Chilian Tawny . . . . .	12/-	12/-	n. q.	n. q.	n. q.	n. q.	12/3	n. q.	n. 16/-		
Milan (b), (lire p. quintal):											
Home grown . . . . .	50.00	50.00	50.00	48.50	47.35	67.50	69.00	62.80	73.60		
Foreign imported . . . . .	49.00	49.00	49.00	48.00	48.00	65.50	63.50	57.10	65.20		
MAIZE.											
Braila: Danubian (1c1 p. quintal) . . . . .	170	165	160	160	162	198	172	187	210		
Chicago: No. 2 Mixed Amer. (cents p. 56 lb.)	48 3/4	47 1/4	51 1/4	49 1/2	52	30 1/4	44	34	58 1/4		
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	3.85	3.87 1/2	3.80	3.82 1/2	3.90	4.89	3.53	4.63	3.82		
Antwerp, (francs p. quintal):											
Bessarubian . . . . .	n. q.	n. q.	n. q.	n. q.	48.00	n. q.	65.25	n. q.	71.25		
Yellow Plate . . . . .	43.50	43.00	43.50	43.50	55.35	56.70	52.00	57.20	65.00		
Argentine Cinquantino . . . . .	50.00	51.00	52.00	54.00	46.25	63.20	55.75	63.80	81.00		
London and Liverpool, parcels, c. i. f. (shillings p. 480 lb.):											
Danubian . . . . .	16/9	16/7 1/2	16/-	15/9	16/1 1/2	19/10	13/7	n. 19/3	n. 17/4		
Yellow Plate . . . . .	15/9	16/-	15/4 1/2	15/3	15/7	19/-	12/7	18/2	15/6		
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	21/1	18/1	n. 20/11	n. 18/1		
Milan (b) Home grown (lire p. quintal) .	49.00	49.00	49.00	48.00	48.00	n. 57.00	59.50	68.70	51.90		
RICE (CLEANED).											
Milan (b), (lire p. quintal):											
Vialone (Camolino) . . . . .	190.00	200.00	215.00	225.00	226.85	184.25	124.35	181.15	145.90		
Maratelli (Camolino) . . . . .	137.50	135.00	137.50	139.40	140.75	155.20	103.75	151.25	117.35		
Originario (Raffinato) . . . . .	94.50	95.50	95.50	97.00	97.00	130.00	87.75	121.40	103.20		
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	201	194	203	205	195 3/4	261 1/2	278 1/4	268 3/8	249 1/4		
Saigon (Indo-chinese piastres p. quintal):											
No. 1 Round white (25 % broken) . . . . .	...	...	...	4.20	4.55	5.06	7.52	5.48	6.73		
No. 2 Japan (40 % broken) . . . . .	...	...	...	3.95	4.30	4.72	7.07	5.11	6.20		
London (a), c. i. f. (shillings p. 112 lb.):											
No. 3 Spanish Belloch, oiled . . . . .	12/6	n. q.	n. q.	10/6	9/11 1/4	13/3	10/3	13/8	11/11		
No. 6 Italian good, oiled . . . . .	10/6	11/3	11/3	11/3	12/10 1/2	n. q.	n. q.	14/-	13/7		
American Blue Rose . . . . .	21/6	21/6	n. q.	n. q.	17/6	18/-	17/1	17/1	18/7		
No. 2 Burma . . . . .	6 1/4	6 1/2	6 1/2	6/9	6/8 3/4	8/3	8/3	8/4	7/11		
No. 1 Saigon . . . . .	7 1/4	7 1/4	7 1/4	7 1/4	7/4	8/-	8/1	8/5	8/1		
Siam special 3) . . . . .	8 1/2	8 1/2	8/-	8/3	8/4	8/11	8/1	9/4 1/2	9/5		
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	21.00	20.40	20.50	20.10	20.82	19.87	19.27	21.20	18.46		
LINSEED.											
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	11.50	12.20	11.75	11.60	11.94	10.19	10.67	9.22	10.82		
Antwerp: Plate (francs p. quintal) . . . . .	126.00	123.50	121.00	122.00	126.35	111.40	136.00	103.25	146.00		
London, c. i. f. (£ p. long ton):											
Plate (delivery Hull) . . . . .	10-5-0	11-11-3	11-0-0	n. 10-13-9	10-17-10	9-3-6	7-11-3	8-8-4	8-14-1		
Bombay bold . . . . .	11-13-9	12-5-0	12-0-0	11-17-6	12-0-7	11-19-0	9-16-8	11-10-0	11-9-6		
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.) . . . . .	188	182	179	187 1/2	190	113 3/8	132	118 1/4	148		

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From August: prices paid of the farm. — 3) Before January 1932: No. 1 Garden Siam. — 4) Average of the first 3 weeks. — 5) New crop. — 6) 18 Aug.: 15/6; 11 Aug.: 15/3; 4 Aug.: 15/6. — 7) 35-36 lb. p. bush. — 8) Shipping Oct.-Nov. — 9) No. 3 Wh. Afr. — 10) 18 Aug.: 4.53; 11 Aug.: 4.61; 4 Aug.: 4.86. — 11) 18 Aug.: 4.28; 11 Aug.: 4.58; 4 Aug.: 4.61.

PRODUCTS, MARKETS AND DESCRIPTION	15	8	1	25	AVERAGE 1)					Commercial Season	
	Sept.	Sept.	Sept.	August	August	Sept.	Sept.				
	1933	1933	1933	1933	1933	1932	1931			1931-32	1930-31
COTTONSEED.											
Alexandria: Sakellariadis (piastres p. ardeb)	<sup>a)</sup> 48.9	<sup>a)</sup> 49.4	<sup>a)</sup> 48.9	46.3	48.8	67.9	<sup>a)</sup> 45.1			60.0	52.2
London: Sakellariadis (delivery Hull; 1 long ton).	<sup>b)</sup> 5-3-9	<sup>b)</sup> 4-18-9	<sup>b)</sup> 4-17-6	5-0-0	5-5-11	7-0-3	<sup>b)</sup> 4-19-2			6-3-7	5-12-6
COTTON.											
New Orleans: Middling (cents p. lb.)	9.33	8.68	9.20	9.52	9.51	7.63	6.22			7.27	6.20
New York: Middling (cents p. lb.)	9.60	9.00	9.45	9.55	9.56	7.70	6.54			7.38	6.35
Bombay: M. g. Broach f. g. (rupees p. 78½ lb.)	177 ½	185	185	192 ½	195	227	<sup>a)</sup> 147 ½			200 ¾	181 ½
Alexandria (talaris p. kantar):											
Sakellariadis f. g. f.	12.80	12.65	13.30	13.20	13.94	16.51	<sup>a)</sup> 10.82			14.15	12.10
Ashmuni-Zagora f. g. f.	10.97	10.92	11.67	11.67	12.48	13.55	<sup>a)</sup> 7.93			12.46	9.69
Bremen: Middling (U. S. cents p. lb.)	10.68	10.32	10.69	10.72	11.08	8.82	7.59			8.54	7.44
M. g. Broach fully good (pence p. lb.)	n. 4.75	n. 4.60	n. 4.70	n. 4.70	n. 4.89	n. 5.30	<sup>a)</sup> n. 3.33			n. 4.81	n. 4.46
Le Havre: Middling, Gulf (francs p. 50 kg.)	213.00	210.00	220.00	226.00	235.50	263.40	224.00			233.75	216.00
Liverpool (pence per lb.):											
Middling fair	n. 6.67	n. 6.58	n. 6.77	n. 6.70	n. 7.03	n. 7.16	<sup>a)</sup> n. 4.92			n. 6.76	n. 5.85
Middling	5.47	5.38	5.60	5.53	5.83	6.13	<sup>a)</sup> 3.72			5.61	4.79
São Paulo, g. f.	n. 5.82	n. 5.73	n. 5.92	n. 5.85	n. 6.11	n. 6.38	<sup>a)</sup> 3.90			n. 5.87	n. 4.98
M. g. Broach, f. g.	n. 4.43	n. 4.32	n. 4.48	n. 4.44	n. 4.79	n. 5.69	<sup>a)</sup> n. 3.00			n. 5.01	n. 4.34
Sakellariadis, f. g. f.	7.30	7.25	7.53	7.52	7.86	8.67	<sup>a)</sup> 5.73			7.77	6.76
BUTTER.											
Copenhagen (a) Danish (Crs. p. quint.)	208.00	200.00	186.00	178.00	177.20	192.00	<sup>a)</sup> 208.00			178.70	209.00
Leeuwarden, Commission for the Dutch butter quotations (a) (florins p. kg.)	0.68	0.63	0.63	0.66	0.63	0.84	1.27			0.94	1.34
Zutphen, auction: Dutch (fl. p. kg.) 2)	1.70	1.67	1.66	1.69	1.66	1.49	1.30			1.27	1.38
Hamburg, auction (b): Schleswig-Holstein butter, with qual. mark (Rm. p. 50 kg.)	128.80	126.70	126.45	126.54	123.04	114.33	132.61			115.83	131.22
Kempten (b): Allgäu butter (Pl. p. ½ kg.) 3)	123	120	120	119	117 ¼	105	104 ½			107	110
London (c) (shillings p. cwt.):											
British blended	119/-	116/8	116/8	116/8	113/10 ½	135/4	<sup>a)</sup> 140/-			131/6	140/4
Danish	114/-	111/-	110/-	110/-	107/5	126/3	<sup>a)</sup> 130/-			123/2	133/4
Irish creamery, salted	106/-	100/-	96/-	94/-	90/2 ½	115/3	<sup>a)</sup> 120/4			n. 111/-	119/5
Dutch	113/-	112/-	112/-	110/-	107/-	115/5	<sup>a)</sup> 123/8			n. 115/10	132/1
Argentine	n. g.	n. g.	n. g.	n. g.	n. 88/8	101/4	<sup>a)</sup> 117/-			n. 103/9	117/7
Siberian 4)	85/-	82/-	81/6	80/-	78/11	95/6	n. g.			n. 93/3	n. g.
Australian, salted	104/-	99/-	96/-	96/-	92/2 ½	112/-	<sup>a)</sup> 115/-			105/7	116/8
New Zealand, salted	105/-	100/-	98/-	98/-	93/9 ½	120/3	<sup>a)</sup> 117/4			109/10	119/11
CHEESE.											
Milan (lire p. quintal):											
Parmigiano-Reggiano, 1st quality, last year's production	<sup>a)</sup> 865.00	<sup>a)</sup> 865.00	<sup>a)</sup> 865.00	1,050.00	1,050.00	<sup>a)</sup> 950.00	<sup>a)</sup> 975.00			1,016.00	1,103.00
Green Gorgonzola, mature, choice	425.00	425.00	415.00	415.00	422.50	497.50	616.00			512.70	616.00
Rome: Roman pecorino, choice (lire p. q.)	<sup>a)</sup> 925.00	<sup>a)</sup> 950.00	<sup>a)</sup> 950.00	1,000.00	1,019.00	1,180.00	1,075.00			1,251.00	1,121.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.)	20.00	20.00	21.00	19.50	20.00	21.90	34.75			24.41	32.63
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.)	26.00	25.50	26.00	25.50	24.25	26.40	40.50			26.92	37.93
Kempten (b); (Piemonte p. ½ kg.):	23 ½	23 ½	23 ½	23 ½	23 ½	22 ½	27			21	24
Soft cheese, green (20 % butterfat)											
Emmenthal from the Allgäu (whole milk cheese) 1st quality	71	71	71	71	71 ½	80 ½	99			81 ½	97 ½
London (c) (shillings p. cwt.):											
English Cheddar	98/-	98/-	98/-	98/-	100/4 ½	97/-	<sup>a)</sup> 94/8			109/-	99/10
Canadian	58/-	57/-	<sup>a)</sup> 58/-	<sup>a)</sup> 57/6	66/1	64/-	72/10			75/9	75/9
New Zealand	56/-	53/6	54/-	54/-	54/3 ½	64/10	<sup>a)</sup> 64/10			63/1	63/2
Liverpool (c): English Cheshire, un- graded (sh. p. cwt.)	93/6	79/6	70/-	65/4	63/4 ½	78/9	<sup>a)</sup> 72/4			103/10	94/3

n. g. = not quoted. — n = nominal. — a) Thursday prices. — b) Wednesday prices. — c) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Before January 1933: quotations in Maastricht; see note on page 425 of the *Crop Report* of June. — 3) The method of quotation was changed in January 1932; in June 1933 another change has occurred; see note on page 425 of the *Crop Report* of June. — 4) September 1932-January 1933 and July - 6 Sept. 1933: Russian. — 5) Quality: "Upper Egypt". — 6) Average of the first 3 weeks. — 7) New crop, shipping Oct. — 8) New.

## IMPORT DUTIES AND OTHER MEASURES IN CONNECTION WITH THE IMPOR

The duties are given per quintal in the currencies of the respective countries (column a) and per bushel or barrel in gold dollar cents (column b). For the interpretation of the capital letters (A, A-I, A-II, B, C, D, E, M, and P) see page 654

COUNTRIES AND RESPECTIVE CURRENCIES	Classification	WHEAT		RYE		BARLEY		OATS		MAIZE	
		a	b	a	b	a	b	a	b	a	b
Albania . . . . . (gold francs)	A	25.00	131.28	15.00	73.51	15.00	63.01	8.00	22.40	3.00	14.70
	B	3.25	17.07	1.95	9.56	1.95	8.19	1.04	2.91	—	—
Germany <sup>1)</sup> . . . . . (reichsmarks)	A	E. 25.00 <sup>2)</sup>	E. 162.05 <sup>3)</sup>	20.00 <sup>2)</sup>	121.00 <sup>2)</sup>	20.00 <sup>2)</sup> P. 18.00 <sup>2)</sup>	103.71 <sup>2)</sup> P. 93.34 <sup>2)</sup>	16.00 <sup>2)</sup>	55.31 <sup>2)</sup>	M. <sup>2)</sup> 2.50	M. <sup>2)</sup> 15.14
Austria <sup>1)</sup> . . . . . (gold crowns) <sup>2)</sup>	A-I	6.00	32.87	6.00	30.68	6.00 <sup>2)</sup>	26.30 <sup>2)</sup>	D. 3.00	D. 8.77	—	—
	A-II	2.80	15.33	4.00	20.44	4.00 <sup>2)</sup>	17.52 <sup>2)</sup>	—	—	—	—
Belgium <sup>1)</sup> . . . . . (francs)	A-I	D.E. —	D.E. —	D. <sup>2)</sup> —	D. <sup>2)</sup> —	D. <sup>2)</sup> —	D. <sup>2)</sup> —	D. <sup>2)</sup> 21.00	D. <sup>2)</sup> 8.51	—	—
	A-II	—	—	—	—	—	—	D. <sup>2)</sup> 3.15	D. <sup>2)</sup> 1.29	—	—
Bulgaria . . . . . (paper levass)	A	162.00	32.03	162.00	29.90	135.00	21.38	162.00	17.08	162.00	29.90
	B	49.00	9.71	49.00	9.07	42.00	6.64	48.00	5.07	48.00	8.87
Denmark . . . . . (crowns)	A	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —
Spain . . . . . (pesetas) <sup>1)</sup>	A	C. 6.50 <sup>2)</sup>	C.n. 34.13 <sup>2)</sup>	12.00	n. 58.81	12.00	n. 50.41	8.00	n. 22.40	C. 6.70 <sup>2)</sup>	C.n. 32.84 <sup>1)</sup>
Estonia . . . . . (crowns)	A	M. <sup>1)</sup> 11.00 <sup>2)</sup>	M. <sup>1)</sup> 52.25 <sup>2)</sup>	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> 7.50	M. <sup>1)</sup> 28.52	M. <sup>1)</sup> 2.00	M. <sup>1)</sup> 5.07	20.00	88.71
Irish Free State . . (shillings)	A	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —
Finland . . . . . (finmarks)	A	130.00	53.09	E. 125.00 <sup>1)</sup>	E. 47.64 <sup>2)</sup>	100.00	32.68	E. 25.00	E. 5.43	—	—
France <sup>1)</sup> <sup>2)</sup> . . . . . (francs)	A	D.E. 80.00 <sup>2)</sup>	D.E. 85.28 <sup>2)</sup>	40.00	39.79	C. 21.00	C. 17.89	40.00	22.74	C. 40.00 <sup>2)</sup>	39.79 <sup>2)</sup>
	B	—	—	—	—	C. 25.00	C. 21.30	—	—	—	—
Great Britain and Northern Ireland (shillings)	A <sup>1)</sup>	2/- <sup>2)</sup>	4.20	10 <sup>2)</sup> / <sub>9</sub> ad val.	10 <sup>2)</sup> / <sub>9</sub> ad val.	10 <sup>2)</sup> / <sub>9</sub> ad val.	10 <sup>2)</sup> / <sub>9</sub> ad val.	10 <sup>2)</sup> / <sub>9</sub> ad val.	10 <sup>2)</sup> / <sub>9</sub> ad val.	— <sup>2)</sup>	— <sup>1)</sup>

## OF CEREALS AND FLOURS IN FORCE IN EUROPE ON 1 JULY 1933 (see over)

GENERAL NOTE: The duties indicated are those generally applied. Reductions into gold dollar cents have been made, for countries that on 1st July maintained the gold standard, according to the legal parity (see table on page 514), for other countries according to the exchange rates (see table on page 662) or according to the special rules established for that purpose (see the notes below).

WHEAT FLOUR		RYE FLOUR		NOTES	COUNTRIES AND RESPECTIVE CURRENCIES
a	b	a	b		
37.50	643.24	12.00	205.84	—	Albania (gold francs)
4.87	83.54	1.56	26.76		
3. 43.16	E. 914.25	43.16	914.25	1) In addition turnover tax ad valorem (including import duty): of 0.85 %. — 2) General autonomous duties; for reduced duties and duties of super-tariff see p. 656. — 3) Barley for fodder; import prohibited until 31 July 1933. — 4) For details concerning monopoly see <i>Monthly Bulletin of Agricultural Economics and Sociology</i> , July 1933, p. 254 and p. 262.	Germany <sup>1)</sup> (reichsmarks)
D. 15.50	D. 277.36	D. 15.50	D. 277.36	1) In addition turnover tax ad valorem (including import duty): for cereals in the grain 4 %, for wheat flour 14 %, for rye flour 7 %. — 2) Official ratio between gold crown and schilling of the legal currency: 1 gold crown = 1.83 schillings. — 3) General duty; barley for fodder, recognized as such: exempt.	Austria <sup>1)</sup> (gold crowns <sup>2)</sup> )
D. 5.60	D. 100.17	D. 8.00	D. 143.06		
D.E. 4.00	D.E. 9.95	D. 4.00	D. 9.95	1) In addition transmission tax ad valorem (including import duty) for wheat, rye and their flours 2.5 %; for barley, oats and maize 5 %. — 2) As far as these products originate in or are consigned from the U. S. S. R.	Belgium <sup>1)</sup> (francs)
D.E. 0.60	D.E. 1.54	D. 0.60	D. 1.54		
324.00	209.44	324.00	209.44	—	Bulgaria (paper levass)
83.00	53.69	83.00	53.69		
C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	C. <sup>1)</sup> —	1) Imports limited for each product to 100 % per year of the import value of the same product in 1931.	Denmark (crowns)
P. 21.00	P. n. 360.21	P. 9.00	P. n. 154.58	1) 25 % of the duties is levied in gold or in equivalent currency, 75 % in paper pesetas with a supplement fixed every 10 days. — 2) Sliding scale; duty fixed in relation to the quota.	Spain (pesetas) <sup>1)</sup>
M. <sup>1)</sup> 29.00 <sup>2)</sup> M. <sup>1)</sup> 18.00 <sup>3)</sup>	M. <sup>1)</sup> 450.09 <sup>2)</sup> M. <sup>1)</sup> 279.42 <sup>3)</sup>	M. <sup>1)</sup> 5.00	M. <sup>1)</sup> 77.53	1) For details concerning monopolies see <i>Monthly Bulletin of Agricultural Economics and Sociology</i> , July 1933, p. 279. — 2) General minimum duty; Estonian mills have the right to import 145 kg. of whole wheat without payment of customs duty for each quintal of bolted wheat flour exported in the year preceding the import. On shipments originating in and consigned from Lithuania a preferential duty of crown 8.80 (gold \$c. 41.80 p. bush.) is levied. — 3) Bolted flour. — 4) Unbolted flour.	Estonia (crowns)
M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	M. <sup>1)</sup> —	1) For details concerning monopoly see <i>Monthly Bulletin of Agricultural Economics and Sociology</i> , August 1933, p. 302.	Irish Free State (shillings)
150.00 <sup>2)</sup> 250.00 <sup>3)</sup>	200.18 <sup>2)</sup> 333.63 <sup>3)</sup>	145.00 <sup>2)</sup> 225.00 <sup>3)</sup>	193.49 <sup>2)</sup> 300.18 <sup>3)</sup>	1) Sliding scale, in relation to the price of imported rye. — 2) Unsifted flour. — 3) Sifted or granulated flour. — 4) Unbolted flour. — 5) Bolted flour.	Finland (finmarks)
D.E. 128.00 <sup>2)</sup> D.E. 160.00 <sup>3)</sup> D.E. 185.00 <sup>4)</sup>	D.E. 445.81 <sup>2)</sup> D.E. 557.30 <sup>3)</sup> D.E. 644.27 <sup>4)</sup>	80.00	278.56	1) In addition exchange surtax (see p. 657) and import tax ad valorem for cereals in the grain 2 %, for flour 4 %. — 2) Duties of the minimum tariff; see p. 658. — 3) See p. 658 — 4) General duty of the minimum tariff; for reduced duties see p. 658 — 5) Bolting 70 % and over. — 6) Bolting 60 to 70 %. — 7) Bolting 60 % and under.	France <sup>1)</sup> <sup>2)</sup> (francs)
—	—	—	—		
10 % ad val.	10 % ad val.	10 % ad val.	10 % ad val.	1) Duties on products not originating in or not consigned from countries of the British Empire. — 2) Shillings per quarter. — 3) Only for white, flat maize 10 % ad valorem.	Great Britain and Northern Ireland (shillings)

## IMPORT DUTIES AND OTHER MEASURES CONCERNING IMPORT OF

COUNTRIES AND RESPECTIVE CURRENCIES	Classification	WHEAT		RYE		BARLEY		OATS		MAIZE	
		a	b	a	b	a	b	a	b	a	b
Greece . . . . . (gold drachmai) <sup>1)</sup>	A	E. 6.00	E. 14.18	5.00	11.03	5.00	9.45	5.00	6.30	5.00 <sup>2)</sup> 6.00 <sup>3)</sup> 3.00 <sup>4)</sup>	11.03 <sup>2)</sup> 13.23 <sup>3)</sup> 6.62 <sup>4)</sup>
	B	E. 4.50	E. 10.61	3.75	8.28	3.75	7.10	3.75	4.73	3.75 <sup>2)</sup> 4.50 <sup>3)</sup> 2.25 <sup>4)</sup>	8.28 <sup>2)</sup> 9.90 <sup>3)</sup> 4.95 <sup>4)</sup>
Hungary . . . . . (gold crowns) <sup>1)</sup>	A	E. 6.30 <sup>2)</sup>	E.n.34.76 <sup>3)</sup>	5.80 <sup>2)</sup>	n. 29.85 <sup>2)</sup>	5.00 <sup>2)</sup>	n. 22.05 <sup>2)</sup>	4.80 <sup>2)</sup>	n. 14.11 <sup>2)</sup>	2.00 <sup>2)</sup>	n. 10.29 <sup>2)</sup>
Italy <sup>1)</sup> . . . . . (lire)	A	E. 75.00 <sup>2)</sup>	E. 107.44 <sup>2)</sup>	36.50	48.81	14.70 <sup>2)</sup>	16.84 <sup>2)</sup>	16.00	12.24	30.00 <sup>2)</sup> 75.00 <sup>4)</sup>	40.09 <sup>2)</sup> 100.27 <sup>4)</sup>
Latvia . . . . . (lats)	A	C.E. 7.00 <sup>1)</sup>	C.E. 33.24 <sup>1)</sup>	C.E. —	C.E. —	C. 3.00	C. 11.38	C. 3.00	C. 7.59	C. —	C. —
Lithuania . . . . . (lits)	A	30.00	81.92	20.00	50.97	20.00	43.69	20.00	29.13	20.00	50.97
Norway . . . . . (crowns)	A	M. —	M. —	M. —	M. —	M. —	M. —	M. —	M. —	M. —	M. —
Netherlands. . . . . (florins)	A	E. —	E. —	—	—	—	—	—	—	—	—
Poland . . . . . (zlotys)	A	E. 25.00 <sup>1)</sup>	E. 76.24 <sup>1)</sup>	E. 17.00 <sup>1)</sup>	E. 48.42 <sup>1)</sup>	17.00	41.50	17.00	27.67	6.00 <sup>2)</sup>	17.10 <sup>2)</sup>
	B	E. 5.00 <sup>1)</sup>	E. 15.23 <sup>1)</sup>	E. 3.40 <sup>1)</sup>	E. 9.70 <sup>1)</sup>	3.40	8.32	3.40	5.54	0.60	1.72
Portugal . . . . . (gold escudos) <sup>1)</sup>	A	C. ... <sup>2)</sup>	C. ... <sup>2)</sup>	C. ... <sup>2)</sup>	C. ... <sup>2)</sup>	3.12	51.00	3.12	34.00	2.40	45.77
Rumania . . . . . (lei)	A	400.00	65.11	400.00	60.77	40.00	5.21	36.00	3.14	36.00	5.49
Sweden . . . . . (crowns)	A	M.E. 3.70 <sup>1)</sup>	M.E. 17.49 <sup>1)</sup>	M.E. 3.70 <sup>1)</sup>	M.E. 16.32 <sup>1)</sup>	3.70	13.99	E. —	E. —	—	—
Switzerland . . . . . (francs)	A-I	0.60 <sup>1)</sup>	3.15 <sup>1)</sup>	0.60 <sup>1)</sup>	2.94 <sup>1)</sup>	M. 0.60	M. 2.52	M. 0.60	M. 1.68	M. 0.60	M. 2.94
	A-II	—	—	—	—	M. 24.35 <sup>1)</sup>	M. 102.29 <sup>1)</sup>	M. 4.00	M. 11.20	M. 4.00	M. 19.60
Czechoslovakia . . . . . (crowns)	A-I	D.E. 30.00	D.E. 24.26	D.E. 38.00	D.E. 28.67	D. 34.00	D. 22.01	D. 36.00	D. 15.51	D. 18.00 <sup>1)</sup>	D. 13.58 <sup>1)</sup>
	A-II	D.E. 25.00	D.E. 20.22	D.E. 50.00	D.E. 37.74	D. 36.00	D. 23.27	D. 34.00	D. 14.67	—	—
	B <sup>1)</sup>	D.E. 3.50	D.E. 2.84	D.E. 3.20	D.E. 2.40	D. 3.50	D. 22.68	D. 2.80	D. 1.20	D. 13.50	D. 10.19
Yugoslavia <sup>1)</sup> . . . . . (gold dinars)	A	10.00	40.28	10.00	37.59	6.00	19.32	3.00	6.44	5.00	18.82



CE IN EUROPE ON 1 JULY 1933 (*concluded*)

NOTES	COUNTRIES AND RESPECTIVE CURRENCIES
1) 1 gold drachma, for payment of import duties on cereals in the grain = 15 paper drachmai, for payment of duties on flour = 20 paper drachmai. — 2) Yellow maize. — 3) White maize. — 4) Pignoletto maize. — 5) In large bales (otherwise gold drachmai 12.00 and 9.00 = gold dollar cents 123.50 and 92.63).	Greece (gold drachmai)
1) See p. 658. — 2) Cereals for seeding purposes, with special permit: exempt.	Hungary (gold crowns) <sup>1)</sup>
1) In addition turnover tax: barley and maize for industrial purposes as well as oats for all purposes, 2.5 % ad valorem; other products exempt. — 2) Annual quota of products originating in and consigned from the Italian colonies: wheat, 100,000 quintals: exempt; barley 160,000 quintals: exempt; maize: 40,000 quintals: 10 lire. — 3) Yellow maize. — 4) White maize: this product, destined for starch manufacture, is exempt under special conditions.	Italy <sup>1)</sup> (lire)
1) For other duties see p. 658. — 2) Unbolted flour. — 3) Bolted flour. — 4) Coarse-milled flour. — 5) Flour bolted at least in part.	Latvia (lats)
---	Lithuania (lits)
---	Norway (crowns)
---	Netherlands (florins)
1) With special permit: exempt. — 2) Maize for seeding purposes, with special permit: exempt. — 3) Imports of annual quota of 15,000 quintals Yugoslavian wheat flour are permitted.	Poland (zlotys)
1) 1 gold escudo = 24.45 paper escudos; 109 <sup>3</sup> / <sub>4</sub> paper escudos = 1 £. — 2) Customs duty fixed each time in relation to quota; see <i>Monthly Bulletin of Agricultural Economics and Sociology</i> , August 1933, p. 316.	Portugal (gold escudos)
---	Rumania (lei)
1) Exempt in the case of previous export of a corresponding quantity of the same cereal in the grain.	Sweden (crowns)
1) Imports are possible only under supervision of the "Société Coopérative Suisse des Céréales et des Matières Fourragères", — 2) Supplementary duty for barley to be sold to breweries.	Switzerland (francs)
1) Turnover tax and tax for import permit together. — 2) Maize for fodder, recognized as such, crowns 6.00 p. quintal (4.53 gold šc. per bushel).	Czechoslovakia (crowns)
1) In addition circulation tax ad valorem (including import duty): cereals in the grain 2 %, flours 2.8 %.	Yugoslavia <sup>1)</sup> (gold dinars)

# NOTES ON THE TABLE OF IMPORT DUTIES, ETC. ON CEREALS AND FLOUR.

*General Note.* — Besides the import duties, a considerable number of restrictions on the world cereal trade should be indicated. These measures are not given here in detail (see *Monthly Bulletin of Agricultural Economics and Sociology*, July and August 1933). Their existence has been noted by means of capital letters as follows :

- A = Import duties (A-I = general duties ; A-II = supplementary duties).
- B = Import taxes, turnover taxes (levied on import), transfer taxes, surtaxes to compensate for exchange variations, etc.
- C = Import quotas.
- D = Import permits.
- E = Milling percentages, bolting percentages, etc.
- M = Monopolies.
- P = Import prohibitions.

*Germany.* — Besides the general duties there are also reduced duties on products imported under customs control for special purposes and on products imported with export certificate. There is also a super-tariff which is reproduced below only in as far as it was applied on 1 July (for shipments originating in or consigned from Poland). These duties are as follows (per quintal) :

	Rm.	Gold dollar cents
<b>Wheat :</b>		
Wheat, super-tariff, general duty . . . . .	30.00	194.46
Hard wheat, imported under customs control for the manufacture of hard wheat groats, to be imported by the mills up to a quota of 45 % of the quantity of foreign hard wheat utilized in 1931 for the same purpose (duty valid until 31-7-33) . . . . .	16.00	103.71
Hard wheat, super-tariff on the same conditions . . . . .	20.00	129.64
Wheat, on production of an export certificate proving export during the period :		
1-8-32 to 31-10-32 . . . . .	—	—
1-11-32 to 31-1-33 . . . . .	0.75	4.86
(duty valid until 31-7-33).		
Wheat, on production of an export certificate proving export of the same quantity of seed wheat during the period 1-2-33 to 31-5-33 (valid until 31-7-33) . . . . .	—	—
Wheat to be imported by mills belonging to a special organization, on production of an export certificate proving the export of a corresponding quantity of products of wheat milling (duty valid until 31-7-33) . . . . .	0.75	4.86
<b>Rye :</b>		
Rye, super tariff, general duty . . . . .	30.00	181.50
Rye, on production of an export certificate proving export of the same quantity during the period :		
1- 8-32 to 31-10-32 . . . . .	—	—
1-11-32 to 31- 1-33 . . . . .	0.50	3.02
(duty valid until 31-7-33).		

	Rm.	Gold dollar cents
Rye, on production of a certificate proving the export of the same quantity of seed rye during the period 1-2-33 to 31-5-33 (valid until 31-7-33) . . . . .	—	—
Rye, to be imported by mills belonging to a special organization, on production of an export certificate showing the export of a corresponding quantity of products of rye milling (valid until 31-7-33).	0.50	3.02

#### Barley:

Barley for stockfeeding, imported under customs control, on purchase of a certain quantity of home grown products . . . . .	4.00	20.74
Barley for stockfeeding, imported under customs control, up to a quota of 20 % of the quantity of barley exported in the form of malt by the malteries having the right to receive an export certificate; on production of a permit, stating that such quantity of barley in the form of malt has been exported (valid until 31-7-33) . . . . .	—	—
Barley other than for stockfeeding, on production of an export certificate, proving that a corresponding quantity in the form of pearled grain, semolina, groats or flakes or of meal, resulting from the manufacture of these products, has been exported (valid until 31-7-33) . . . . .	—	—
Barley on production of an export certificate proving the export of the same quantity of seed barley during the period 1-2-33 to 31-5-33 (valid until 31-7-33) . . . . .	—	—

#### Oats:

Oats, on production of an export certificate stating that a corresponding quantity of oats in the form of milling products (excepting rough oats, coarsely-broken, rolled, bruised or otherwise reduced) has been exported during the period :		
from 26-10-32 to 10-3-33 . . . . .	—	—
after 10-3-33 . . . . .	8.00	27.65
(valid until 31-7-33).		
Oats, on production of an export certificate proving the export of the same quantity of seed oats during the period 1-2-33 to 31-5-33 (valid until 31-7-33) . . . . .	—	—
Oats, on production of an export certificate proving the export of the same quantity of oats (duty valid until 31-7-33). . . . .	8.00	27.65

*France.* — 1 (note 1). Surtax to compensate for exchange variations weighing on imports of commodities originating in or consigned from countries having depreciated currencies. For countries of special interest in this connection, the surtax percentages (*ad valorem*) are as follows:

Great Britain and N. Ireland . . . . .	15
U. S. S. R. . . . .	25
Canada . . . . .	11
Argentina . . . . .	15
India . . . . .	15
Union of South Africa . . . . .	15
Australia . . . . .	15

This surtax does not apply to the shipment of wheat and maize in the grain nor to that of oats for seed, if under official certificate declaring that the grain is selected.

II (note 2). The import duty on shipments originating in or consigned from countries having no commercial treaty with France on the basis of the most favoured nation clause is that of the general tariff, amounting to double the duty of the minimum tariff. For information concerning the situation of shipments from various countries, see *Monthly Bulletin of Agricultural Economics and Sociology*, July 1933, p. 284. It should be noted (see also the same Bulletin, p. 289) that at present the shipments originating in and consigned from Canada are subject to the general tariff, except those of wheat and wheat flour, to which the duties of the minimum tariff are applied.

Shipments originating in and consigned from French Territories outside Europe are mostly exempt (see the same Bulletin, p. 284).

III (note 3). **Wheat**: 10 % of the total quantity of wheat to be imported into France during each commercial year to be purchased in Rumania and 10 % in Yugoslavia, at the world price and subject, without reduction to the minimum tariff rate. The respective Governments will be remitted such a sum as to allow a remunerative price for this wheat but not exceeding 30 % of the customs duty.

**Maize**: 40 % of the import duties to be levied on a quota of 400,000 quintals of Hungarian maize destined for stockfeeding, to be used for the service of Hungarian debts in France.

IV (note 4). The minimum duties are as follows:

	Francs per quintal	Gold dollar cents per bushel
Maize . . . . .	40.00	39.79
Maize for the manufacture of starch and glucose, under customs control: reduction of 35 % of the maize tariff . . . . .	26.00	25.86
Maize, small grained, so-called Bessarabian, in quota .	24.00	19.89

Imports of maize, small grained, so-called Bessarabian, under payment of reduced duty are contingentated. Imports of other maize are also contingentated.

*Hungary*: Within the country, the pengő is considered to be at par, so that the import duties are payable according to the fixed rate: 1 gold crown = 1.16 pengő. The duties in gold dollars are calculated on this basis. In markets outside Hungary, on the contrary, the pengő is quoted at its depreciated value. On the basis of these quotations as on 1 July 1933, the following data are obtained in gold dollar-cents:

Wheat . . . . .	26.05	Maize . . . . .	7.74
Rye . . . . .	22.40	Wheat flour . . . . .	175.65
Barley . . . . .	16.55	Rye flour . . . . .	162.27
Oats . . . . .	10.59		

*Latvia*: Instead of the minimum tariff duties, in certain cases, for shipments originating in and consigned from other Baltic States and the U. S. S. R., reduced preferential duties are levied. For wheat in the grain, shipments from Lithuania are subject to a reduction of 75 % and those from the U. S. S. R. to one of 20 % of the duty.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	August	July	June	May	April	March	August	August	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
									1)	
<b>GERMANY</b>										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	97.0	100.6	100.8	99.4	97.8	99.0	108.6	114.6	112.0	119.3
Livestock . . . . .	66.8	62.3	59.7	59.2	59.9	61.3	71.5	89.0	65.5	83.0
Livestock products . . . . .	102.1	96.2	93.1	93.2	85.3	84.6	90.3	107.9	93.9	108.4
Feeding stuffs . . . . .	84.0	87.3	86.6	84.2	83.4	83.8	90.5	98.3	91.6	101.9
Total agricultural products . . . . .	87.7	86.6	85.1	84.2	81.8	82.5	91.0	103.4	91.3	103.8
Fertilizers 2). . . . .	70.2	69.1	71.9	71.2	71.9	72.7	68.5	72.8	—	76.5
Agricultural dead stock . . . . .	111.9	111.9	111.4	110.9	111.1	111.2	115.1	129.9	116.1	130.7
Finished manufactures (« Konsumgüter ») . . . . .	112.8	112.2	110.8	109.9	109.2	109.5	114.3	139.7	117.5	140.1
Wholesale products in general . . . . .	94.2	93.9	92.9	91.9	90.7	91.1	95.4	110.2	96.5	110.9
<b>ENGLAND AND WALES</b>										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	105	101	100	102	105	102	105	121	109	120
Feeding stuffs . . . . .	83	85	85	85	86	90	97	77	95	83
Fertilizers . . . . .	88	91	91	91	90	90	89	95	90	96
Wholesale products in general 3) . . . . .	95.5	96.1	95.6	95.2	92.4	90.6	94.9	93.1	94.9	97.7
<b>ARGENTINA</b>										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	57.6	61.2	55.8	54.2	51.7	51.7	62.9	53.7	59.5	55.8
Meat . . . . .	68.4	66.2	64.1	65.0	63.7	64.0	70.1	98.7	69.8	94.3
Hides and skins . . . . .	73.7	75.7	74.8	72.3	53.2	49.9	52.8	59.3	53.1	64.5
Wool . . . . .	52.5	59.0	58.0	49.6	41.9	40.8	43.1	55.8	44.2	61.2
Dairy products . . . . .	67.0	66.9	55.4	48.4	49.4	51.8	57.3	84.8	56.9	74.5
Forest products . . . . .	74.3	75.7	75.7	71.8	71.8	71.8	61.6	91.6	68.4	99.3
Total agricultural products . . . . .	60.2	63.0	58.8	56.7	52.8	52.6	61.1	62.6	59.1	63.8
<b>CANADA</b>										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	54.9	60.8	49.4	46.9	41.1	38.0	41.7	41.6	40.7	43.6
Animals and animal products . . . . .	60.5	59.0	57.9	58.4	56.4	56.0	59.3	74.4	60.9	77.6
Total Canadian farm products . . . . .	57.0	60.1	52.6	51.2	46.8	44.7	48.3	53.9	48.3	56.3
Fertilizers . . . . .	75.8	73.0	73.0	73.0	71.7	72.9	72.4	86.5	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	76.2	75.3	75.0	75.5	74.8	76.0	78.6	79.2	78.8	80.0
Wholesale products in general . . . . .	69.4	70.5	67.6	66.9	65.4	64.4	66.8	70.5	67.0	72.1
<b>ESTONIA</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported 4) . . . . .	...	...	...	...	...	...	113	135	113	129
Commodities exported . . . . .	...	...	51	56	54	58	51	78	58	76
Agricultural products imported and exported 4) . . . . .	...	...	...	...	...	...	67	95	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series. — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	August	July	June	May	April	March	August	August	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
									1)	
UNITED STATES (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	81	94	63	62	47	36	43	54	44	63
Fruits and vegetables . . . . .	120	103	74	68	66	60	79	97	71	98
Meat animals. . . . .	63	66	66	65	57	56	69	92	63	93
Dairy products . . . . .	72	71	65	63	59	59	65	87	70	94
Poultry and eggs . . . . .	67	67	55	62	56	54	75	93	80	96
Cotton and cottonseed . . . . .	71	84	69	65	49	48	51	53	46	63
Total agricultural products . . . . .	72	76	64	62	53	50	59	75	57	80
Commodities purchased by farmers 2) . . . . .	112	105	103	100	...	103	108	127	111	129
Agricultural wages 2) . . . . .	—	78	—	—	73	—	3) 89	3) 123	90	116
UNITED STATES (Bureau of Labor) 1926 = 100.										
Grains . . . . .	64.6	73.4	57.4	52.8	44.8	36.0	38.2	44.8	39.4	53.0
Livestock and poultry . . . . .	45.9	47.4	46.6	46.8	41.0	43.0	52.8	67.0	48.3	63.9
Other farm products . . . . .	62.5	63.7	56.2	51.8	46.7	45.3	50.8	67.3	51.4	69.2
Total agricultural products . . . . .	57.6	60.1	53.2	50.2	44.5	42.8	49.1	63.5	48.2	64.8
Agricultural implements . . . . .	83.2	83.0	83.0	83.0	83.1	83.1	84.9	94.5	84.9	94.0
Fertilizer materials . . . . .	69.0	68.6	68.0	66.8	62.9	61.9	66.4	74.4	66.9	76.8
Mixed fertilizers . . . . .	64.4	63.3	63.0	63.1	60.0	60.1	68.3	78.7	69.4	82.0
Cattle feed . . . . .	78.0	82.4	55.8	54.4	49.5	47.3	47.4	50.8	45.9	62.7
Non-agricultural commodities . . . . .	72.0	70.7	67.4	65.4	63.7	63.8	68.5	72.1	68.4	73.0
Wholesale products in general. . . . .	69.5	68.9	65.0	62.7	60.4	60.2	65.2	70.2	64.9	71.1
FINLAND (Central Bureau of Statistics) 1926 = 100.										
Cereals . . . . .	92	93	92	91	90	90	86	76	90	77
Potatoes . . . . .	84	106	106	95	93	93	71	84	71	68
Fodder . . . . .	73	69	69	68	66	67	66	60	69	63
Meat . . . . .	66	64	68	69	68	66	64	64	61	64
Dairy products . . . . .	79	77	73	71	67	67	71	72	76	76
Total agricultural products . . . . .	75	75	75	73	71	72	72	70	74	72
Wholesale products in general. . . . .	90	90	89	88	88	89	89	81	90	84
HUNGARY (Central Bureau of Statistics) 1913 = 100.										
Agricultural and livestock products . . . . .	54	57	66	66	68	71	80	83	—	—
Wholesale products in general. . . . .	71	73	79	79	80	82	89	92	—	—
ITALY (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.										
National agricultural products . . . . .	268.77	261.20	268.08	272.28	275.55	289.77	322.08	330.20	339.63	343.11
Wholesale products in general. . . . .	282.45	283.26	284.98	282.24	282.18	287.23	300.06	331.42	309.91	341.57
NEW ZEALAND (Census and Statistics Office) Average 1909-13 = 100.										
Dairy produce . . . . .	86.2	85.7	82.9	77.3	76.4	77.6	95.5	103.5	93.8	98.9
Meat . . . . .	120.1	113.9	108.8	107.5	110.5	111.8	109.0	126.3	109.1	130.1
Wool . . . . .	73.8	65.8	62.6	56.7	64.7	63.0	57.8	63.4	61.3	67.9
Other pastoral produce . . . . .	94.5	81.8	66.7	55.1	55.6	57.6	57.9	76.5	62.2	76.7
All pastoral and dairy produce . . . . .	91.8	87.0	82.5	77.4	79.9	80.5	85.8	96.3	86.4	96.5
Field products . . . . .	115.8	116.0	114.8	113.9	114.9	115.0	83.1	102.6	101.7	115.5
Total agricultural products . . . . .	92.3	87.8	83.4	78.4	80.9	81.4	85.7	96.4	86.8	97.0

x) Most data for 1932 are provisional. — a) 1910-14 = 100. — 3) July.

COUNTRIES AND CLASSIFICATIONS	August	July	June	May	April	March	August	August	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	116	112	116	116	119	119	118	112	120	125
Potatoes . . . . .	168	160	91	84	80	82	86	170	101	130
Pork . . . . .	78	76	81	79	80	86	87	91	91	96
Other meat . . . . .	106	107	115	119	115	113	115	158	109	218
Eggs . . . . .	82	71	60	68	65	76	85	87	93	108
Dairy products . . . . .	127	121	119	119	119	119	125	126	124	156
Concentrated feeding stuffs . . . . .	94	95	94	98	99	100	107	102	104	121
Maize . . . . .	83	82	85	85	85	87	94	79	90	108
Fertilizers . . . . .	92	92	92	92	92	92	89	85	89	105
<b>NETHERLANDS 4)</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	52	46	36	38	37	40	49	61	2) 42	2) 58
Animal products . . . . .	50	49	50	51	50	48	49	68	2) 51	2) 57
Total agricultural products . . . . .	51	49	47	48	47	46	49	67	2) 49	2) 57
Agricultural wages . . . . .	74	74	74	74	83	83	83	95	2) 81	2) 93
Wholesale products in general 3) . . .	...	49.4	49.4	48.7	48.0	48.7	50.7	63.6	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	36.1	50.8	53.4	47.9	50.4	49.8	43.7	47.7	49.8	53.9
Worked-up plant products . . . . .	48.8	64.4	65.2	60.6	63.5	61.7	59.1	62.1	61.3	65.9
Total products of plant origin . . . . .	42.3	57.5	59.4	54.2	56.9	55.8	51.2	54.8	55.6	60.0
Animals . . . . .	43.4	40.8	41.8	42.9	44.6	43.5	45.6	66.2	43.1	55.8
Dairy products . . . . .	43.4	43.7	39.6	42.6	40.5	45.8	47.7	61.2	53.4	68.0
Total products of animal origin . . . . .	43.6	42.3	41.0	42.8	43.0	44.8	46.8	64.2	48.2	60.8
Total agricultural products . . . . .	42.8	50.4	50.7	49.0	50.5	50.7	48.9	58.3	52.0	59.7
Fertilizers . . . . .	103.2	99.8	99.8	94.5	112.9	112.9	112.9	118.5	105.5	120.2
Industrial products . . . . .	63.4	64.1	64.1	63.0	63.1	63.3	69.7	77.8	69.6	79.4
Wholesale products in general . . . .	53.9	58.0	58.1	56.8	57.6	57.9	60.2	69.0	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	49.3	58.1	61.1	59.3	62.1	61.7	64.0	75.7	67.5	96.7
Animal products . . . . .	55.6	54.0	57.8	55.2	56.2	58.0	53.6	75.6	56.6	97.7
Industrial products . . . . .	68.5	70.5	72.0	71.8	72.7	73.6	63.4	70.8	66.2	80.2
Wholesale products in general . . . .	60.7	63.7	66.1	64.9	66.3	67.8	62.6	73.6	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 respectively 1932-33 are provisional.

# RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	15	8	1	25	AVERAGE					
	Sept.	Sept.	Sept.	August	August	Sept.	Sept.	Commercial		
	1933	1933	1933	1933	1933	1932	1931	Season		
SHIPMENTS OF WHEAT AND MAIZE.										
Danube to Antwerp/Hamburg . . .	{ (shill. per long ton)	13/6	13/9	13/6	13/6	13/6 <sup>1/2</sup> <sub>4</sub>	14/-	14/11	13/9	14/6
Black Sea to Antwerp/Hamburg . .		10/3	9/6	9/3	9/3	9/3 <sup>1/2</sup> <sub>4</sub>	9/7 <sup>1/2</sup>	11/1	10/-	10/1 <sup>1/2</sup>
St. John to Liverpool 1) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7	
Port Churchill to United Kingdom . .	n. q.	2/9	2/9	2/9	2/9	2/9	3/-	—	n. 3/-	
Montreal to United Kingdom . . . .	{ (shill. per 480 lbs.)	14 <sup>1/2</sup>	1/3	1/3	1/1 <sup>1/2</sup>	1/3 <sup>1/2</sup> <sub>4</sub>	2/-	1/8	1/8 <sup>1/2</sup> <sub>4</sub>	
Gulf to United Kingdom . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	2/-	2/1	2/-	
New York to Liverpool 1) . . . . .		1/3	1/3	1/3	1/3	1/3	1/6	1/6	1/6	
Northern Range to U. K./Continent.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7 <sup>1/2</sup>	0.06 <sup>5)</sup>	
North Pacific to United Kingdom (sh. per long ton)	n. 18/6	n. 18/6	n. 18/6	n. 18/6	n. 18/6	n. 21/6	n. q.	n. 20/10	n. 1.98	
Vancouver to Yokohama 1) (gold \$ per sh. ton).	2.15	2.15	2.15	2.15	2.15	2.00	2.51			
La Plata Down River, Necochea, Bahia Blanca 2) to U. K./Cont.	n. q.	n. q.	10/9	13/6	14/0 <sup>1/2</sup> <sub>4</sub>	14/5	16/4 <sup>1/2</sup>	14/-	16.	
La Plata Up River 3) to U. K./Continent..	{ (shill. per long ton)	13/6	13/-	14/-	16/-	16/3 <sup>1/4</sup> <sub>4</sub>	16/5	18/1	15/10	17
Karachi to U. K./Continent 4) . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	2
Western Australia to U. K./Continent . . . . .	n. 23/-	n. q.	n. 23/-	n. q.	n. 23/7	26/3	n. 23/10	24/6 <sup>1/2</sup>	2	
SHIPMENTS OF RICE.										
Saigon to Europe . . . . .	{ (shill. per long ton)	n. 23/-	22/6	n. 23/-	n. 23/6	n. 23/9	25/6	n. q.	23/5	
Burma to U. K./Continent. . . . .		n. q.	n. q.	n. q.	n. q.	n. 22/-	23/7	n. q.	n. 23/3	

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires, Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Comandante Sata-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lb.

# EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (—)			
	15 Sept. 1933	8 Sept. 1933	1 Sept. 1933	25 August 1933	15 Sept. 1933	8 Sept. 1933	1 Sept. 1933	25 August 1933
Germany: reichsmark . . . . .	123.250	123.375	123.500	123.125	— 0.2	— 0.1	— 0.0	— 0.0
Argentina: paper peso *) . . . . .	131.930	129.600	131.261	134.243	— 40.0	— 41.1	— 40.3	— 39.1
Belgium: belga . . . . .	72.050	72.125	72.250	72.150	— 0.0	+ 0.1	+ 0.3	+ 0.4
Canada: dollar *) . . . . .	3.379	3.424	3.439	3.545	— 34.8	— 33.9	— 33.6	— 33.4
Denmark: crown . . . . .	73.000	73.000	74.000	75.500	— 47.4	— 47.4	— 46.7	— 46.4
Egypt: pound 2) . . . . .	16.375	16.360	16.525	16.700	— 35.1	— 35.1	— 34.5	— 34.3
United Kingdom: pound sterling . . . . .	3.520	3.600	3.620	3.730	— 32.1	— 30.5	— 30.2	— 28.8
United States: dollar . . . . .	20.215	20.272	20.285	20.225	— 0.4	— 0.2	— 0.1	— 0.1
France: franc . . . . .	67.500	67.500	67.375	67.675	— 25.5	— 25.5	— 25.7	— 25.7
Indo-China: piaster 3) . . . . .	123.018	123.110	124.352	125.669	— 35.0	— 34.9	— 34.3	— 34.3
Hungary: pengő 4) . . . . .	27.200	27.260	27.200	27.250	— 0.3	— 0.1	— 0.3	— 0.3
India: rupee 5) . . . . .	95.920	95.400	97.740	102.015	— 62.9	— 63.1	— 62.2	— 62.2
Italy: lira . . . . .	208.250	208.650	208.500	208.675	— 0.0	+ 0.2	+ 0.1	+ 0.1
Japan: yen *) . . . . .	58.000	58.000	58.000	57.875	— 0.2	— 0.2	— 0.2	— 0.2
Netherlands: florin . . . . .	3.000	3.000	3.000	3.000	— 3.2	— 3.2	— 3.2	— 3.2
Poland: złoty . . . . .	84.500	84.300	85.000	87.375	— 39.2	— 39.3	— 38.8	— 38.8
Rumania: leu . . . . .	15.350	15.330	15.350	15.325	0.0	— 0.2	0.0	— 0.2
Sweden: crown . . . . .								
Czechoslovakia: crown . . . . .								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling, 1 unit) in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) or a cross (x) conversion has been made, the original exchange rates on New York and on London respectively being converted into Swiss francs means of the U. S. dollar or sterling rates respectively in Zurich. — 2) As the relation between the Egyptian pound and the pound remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

Prof. ALESSANDRO BRIZI, Segretario generale dell'Istituto, Direttore responsabile.



# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

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## WORLD SUPPLIES AND REQUIREMENTS OF WHEAT

Before examining the situation of the world wheat market and outlining the prospects for the 1933-34 season just begun, it seems opportune to summarise briefly the characteristics of the 1932-33 season which ended on 31 July, and to compare the forecasts established in October last year with the results now available.

### RESULTS OF THE 1932-33 SEASON.

*Crop, 1932:* World production of wheat (1) was estimated in the Crop Report of October 1932, on the basis of the preliminary data then available, supplemented by approximate estimates for countries (mostly in the southern hemisphere), that had not yet calculated the quantity of their production, at 3,712 million bushels. With respect to this estimate, the following comments were then made:

«Experience shows that the preliminary estimates of the crop are generally rather conservative and that the final figures in the majority of instances exceed, sometimes very considerably, those available in October. It seems to us, however, that this year the items on either side of the balance between under- and over-estimates are more numerous and more important than usual and we are inclined to believe that the estimate of world wheat production at present available will show a much smaller difference from the final figures than in preceding years».

This judgment, as well as the preliminary estimate of production, has proved to be exact, as may be seen from the following table, in which the forecasts published in the Crop Report of October 1932 are compared with the results now issued.

(1) The world production known, namely, excluding the U. S. S. R., China, Persia, Turkey and Iraq, countries for which no exact or recent information for a series of years, is available.

*Forecasts and final data of world wheat production.*  
(in million bushels).

	1932 crop		1931 crop	
	Forecasts (October 1932)	Final data	Forecasts (October 1931)	Final data
Europe . . . . .	1,511	1,490	1,396	1,435
North America . . . . .	1,187	1,190	1,172	1,238
South America . . . . .	276	277	265	264
Asia . . . . .	397	393	404	407
Africa . . . . .	132	140	132	131
Oceania . . . . .	206	220	158	197
Total . . . . .	3,712	3,710	3,527	3,672

Contrary to the course of events in 1931, total production results in 1932 coincided exactly with the forecasts and the differences between over- and under-estimates for each continent are small and balance perfectly.

*Trade, 1932-33:* As regards the world wheat trade, it was forecast in October 1932 that the requirements of the importing countries would, in the season 1 August 1932 to 31 July 1933, be much smaller than in 1931-32. For Europe, on the basis of the excellent wheat crop, coinciding with a heavy production of rye, maize and potatoes, and also of the effects of the economic policy adopted by a growing number of countries, demand was estimated at 440 million bushels, a decrease of 160 millions compared with the preceding season.

For the extra-European countries the reduction of requirements was calculated to be smaller, owing particularly to the probable increase in the Far Eastern demand, and importation was forecast at 190 million bushels. World import requirements were, on the whole, calculated at 630 millions, a decrease of 170 millions compared at the preceding season. The second estimate made by the Institute in March 1933 confirmed these figures without modification.

The forecasts and estimates made by other organizations have been on the whole larger than those of the Institute. In the small table following the estimates of Broomhall and of the Food Research Institute (Stanford University) are compared with those of the International Institute of Agriculture as well as with the actual results according to official statistics.

*Estimates of Import Requirements of Wheat in 1932-33.*  
(million bushels)

Countries	Shipments	Net exports	
	Broomhall	Food Research Institute	International Institute of Agriculture
	First estimate August 1932	First estimate September 1932	First estimate October 1932
European . . . . .	504	520	440
Extra-European . . . . .	200	200	190
Total . . . . .	704	720	630

Countries	Shipments		Net exports	
	Broomhall		Food Research Institute	International Institute of Agriculture
	—		—	—
	Second estimate March 1933	Second estimate January 1933	Second estimate January 1933	Second estimate March 1933
European . . . . .	480		485	440
Extra-European . . . . .	184		180	190
Total . . . . .	664		665	630
	Final results		Final results	
European . . . . .	449			446
Extra-European . . . . .	166			181
Total . . . . .	615			627

The forecasts issued by these two organizations, which at first showed a rather appreciable difference from those of the Institute approximated on subsequent revision much more closely to the latter, though remaining higher. The difference between the forecasts of the Institute and the actual results is almost negligible.

*Stocks.* — In summing up in October 1932 the position as regards world stocks and requirements of wheat we arrived at the following conclusions: «The exportable stocks, which at the beginning of the season had attained 570 million bushels, a total representing the heaviest accumulation of surpluses so far recorded, will this season undergo a further and very considerable increase, estimated at 100 million bushels ».

There was generally considerable scepticism as regards the forecasts of the Institute and though the latter, in again reviewing the market situation in March 1933, repeated its provisional figures, opinion as a whole continued to incline toward a stationary situation or to only a very moderate increase in total stocks. Even the Food Research Institute in May 1933 did not forecast for 1 August 1933 an increase of more than 30 million bushels on the figures of the beginning of the season. The official figures now available, however, indicate that exportable stocks on 1 August 1933 were 690 millions, an increase of 100 millions on the revised figure of 1 August 1932.

*Exportable wheat stocks at end of season.*

	United States (1)	Canada (2)	Argentina	Australia	Quantity afloat	Totals
1927 . . . . . (million bushels)	86	44	49	24	46	249
1928 . . . . . »	97	83	68	26	45	319
1929 . . . . . »	218	119	109	29	37	512
1930 . . . . . »	271	119	35	38	39	502
1931 . . . . . »	297	131	49	49	38	564
1932 . . . . . »	359	128	33	38	30	588
1933 . . . . . »	350	210	48	52	32	692

(1) Including domestic wheat in store in Canada.

(2) Including domestic wheat in store in the U. S. A.

Summing up the results of the past season, it may be said that world production of wheat in 1932, which was 3,710 million bushels (excluding the U. S. S. R., Turkey, China and certain other small countries) was superabundant in rela-

tion to the requirements for world consumption under present economic and political conditions, though the amount of exports from the U. S. S. R. was limited to the very small figure of 16 million bushels. International movement of wheat, owing to the large internal production of European importing countries and to the policy of protection adopted by them, was greatly reduced, there being a decrease of about 20 % with respect to the previous season. Stocks in exporting countries underwent during the season a further and appreciable increase of over 15 % on the maximum of the past year.

## PROSPECTS OF THE 1933-34 SEASON.

### I. — *The Crop.*

The official data relating to the 1933 wheat crop are this year less complete than in previous years, some countries of the northern hemisphere not having yet published their estimates. The data for countries of the southern hemisphere are also lacking, while in former years, the preliminary estimate for Australia was available. The estimate of world production given below cannot in consequence be considered as more than approximate and susceptible to modification. It seems, however, improbable that it will differ from the final estimate to any considerable degree, though relatively more important differences may occur in the figures for the separate continents, especially in the southern hemisphere, in which crops are not yet approaching maturity.

### *World Wheat Production (1)*

(million bushels).

Years	Europe	N. America	S. America	Asia	Africa	Oceania	Total	U. S. S. R.
Average 1923-27 .	1,243	1,210	275	402	108	143	3,381	1094
1928 . . . . .	1,409	1,504	399	312	116	168	3,938	807
1929 . . . . .	1,449	1,129	221	384	136	134	3,453	691
1930 . . . . .	1,360	1,290	273	456	115	221	3,715	989
1931 . . . . .	1,435	1,238	264	407	131	197	3,672	...
1932 . . . . .	1,490	1,190	277	393	140	220	3,710	...
Forecast 1933 . .	1,670	808	268	415	111	195	3,470	...

(1) Not including China, Persia, Turkey and Iraq.

On the basis of these estimates the 1933 crop appears to be extremely large in Europe, fairly large in Asia, average in South America and Oceania, small in Africa and very poor in North America. The European crop beats all previous records; it even greatly exceeds the maximum of last year. The increase in production is due only in small part to increase in areas cultivated, an increase which from 1932 to 1933 amounted to only 2 million acres; it is principally the result of high unit-yields. Variations in unit-yields from year to year may generally be related to the more or less favourable character of the season; there is no doubt, however, that yields above the average have been obtained in the last few years in Europe.

*Unit-Yields of Wheat (1).*

(bushels per acre).

Years	Europe	North America	South America	Asia (2)	Africa	Oceania	Total	U. R. S. S.
Average 1923-27. .	18.0	15.4	13.0	11.4	10.8	12.9	15.0	11.1
1928 . . . . .	19.8	17.8	15.5	9.5	10.6	11.2	16.1	11.7
1929 . . . . .	20.7	12.6	11.3	10.7	11.7	8.8	14.3	9.5
1930 . . . . .	18.4	14.9	11.9	12.8	9.7	12.0	14.9	12.3
1931 . . . . .	18.9	15.0	13.5	11.3	11.2	13.1	15.2	...
1932 . . . . .	19.8	14.1	13.2	10.4	11.4	13.4	15.0	...
Forecast 1933 . .	21.6	11.2	13.1	11.3	9.5	13.1	15.2	...

(1) Calculated on the area harvested.

(2) Not including China, Persia, Turkey and Iraq.

This phenomenon of steady improvement in unit-yields of European countries should not be considered exclusively as the effect of a long series of favourable seasons ; it would appear to depend in large part also on technical progress in wheat culture, which results also in attenuating the influence of unfavourable weather and other adverse factors. On the one hand, the propaganda of the various European Governments in favour of the application of better methods and on the other the greater profitability of wheat with respect to other crops due to the high prices in the protected home markets have encouraged the adoption of rational cultural methods, that, though more costly, are more remunerative and have powerfully contributed to the rise in unit-yields in a number of countries. It is not, therefore, fortuitous or temporary circumstances but deep-lying and more constant factors that have affected the amount of wheat produced in Europe, factors of which the surplus-producing countries must take account when drawing up their plans for the adaptation of supplies to requirements and the marketing of their exportable surpluses.

As regards the other continents, the very poor crop in North America is due partly to the reduction in areas cultivated and partly to the decline in unit-yields, which have been very low, for both the winter and spring crops and in both Canada and the United States.

On the whole, world production in 1933 appears, on the basis of present estimates and forecasts, to be the smallest recorded since 1926 ; it is at the same time the lowest for the exporting countries taken together and the highest for the importing countries since the war. With respect to last year there is a decrease of about 240 million bushels ; if account is taken, however, of the fact that in the U. S. S. R. and in China, countries for which no data of production are available, the crop seems to have been better than that of 1932, which was a small one in these two countries, the decrease may be appreciably smaller.

II. — *Exportable supplies.*

All the wheat exceeding requirements for internal consumption is considered as exportable, allowing for a reserve of the minimum necessary for the passage from one season to the other. Exportable supplies therefore represent

the difference between total supplies (old crop stocks on 1 August + new production) and requirements (consumption + minimum carryover).

*North America.* — The crop in the United States has been so poor that it will certainly not suffice to cover the current season's consumption of that country though an appreciable contraction in the latter may be expected. The steady increase in prices of wheat and wheat flour compared with those of last year, the fact that the relation of wheat prices to those of fodder cereals is unfavourable to a heavy utilization of wheat for stock-feeding, the expected reduction in the quantities necessary for sowing, are all factors tending to lower United States internal disappearance of wheat. Taking these factors into account a contraction of about 10 % in internal requirements in the current season with respect to those in 1932-33, giving a total of about 625 million bushels against 687 million last year, may be expected. This estimate is, moreover, a little larger than that of the U. S. Department of Agriculture, which, on 26 August, estimated the probable home consumption in 1933-34 at 600 million bushels. The 1933 crop having amounted to 515 millions, it will be necessary to take 110 millions from the stocks of old crops existing in the country at the beginning of the season. Deducting from this amount, estimated at 405 million bushels, 110 million for consumption and 55 million as the minimum carryover at the end of the season, the export surplus of the United States in 1933-34 should be 240 million bushels.

In Canada the total supplies for the current season are estimated at 502 million bushels (283 of new crop and 219 million of stocks). Internal consumption may, in view of the very poor production of fodder cereals which will make it possible for stock-feeding to absorb a larger amount of low-quality wheat be estimated at a little above that of last year, notwithstanding the probable contraction in the quantities used for seed. It may be estimated that the amount consumed internally will be 123 million bushels against 111 million last year. Deducting from the total also 9 millions of minimum carryover, the export surplus in 1933-34 is seen to be in all 370 million bushels.

*Argentina and Australia.* — For the two exporting countries of the southern hemisphere the calculation of the surpluses cannot be made in any save a largely approximate way since the new crops will not be harvested for another month or two and preliminary forecasts are not yet officially determined.

The area sown in Argentina this year is slightly less than in 1932 (18.9 million acres against 19.8). On the other hand weather damage and losses due to locusts appear this year to have been less than in 1932, when about 10 % of the sown area gave no crop. Applying to this year's area a coefficient of loss somewhat less than the average, which is calculated at about 8 %, the area harvested should be approximately the same as last year (17.8 million acres). Given the fact that after the drought of August, which caused some anxiety as to the outcome of the crop, very beneficial rains fell between the middle of September and the middle of October, it would appear probable, if weather remains favourable, that a yield approximating to the average of recent years, that is about 13 bushels per acre, will be obtained. On that basis the coming crop in Argentina may be forecast at 225 million bushels, a figure that may evidently differ appreciably from the actual result, according to the more or less satisfactory course of the weather

from now until the harvest. The 225 millions of the new crop should, deducting the 90 millions necessary for internal consumption, leave an export surplus of 135 millions, which, together with the 48 millions of old crop stocks existing in the country on 1 August, should give a total export surplus of about 180 million bushels for 1933-34.

In Australia, the area sown to wheat, 14.5 million acres, is 670,000 acres smaller than last year. The season has been less favourable than in 1932 owing to the fact that in some important producing areas, rain fell too late to be of great advantage to crops compromised by the drought. It is consequently anticipated that the yield per acre will be much smaller than the exceptional one of last year (13.8 bushels per acre), but much above the average (10.8 bushels per acre). On this basis, with the same reserve expressed previously in the case of Argentina, we forecast the new Australian production at 184 million bushels and the exportable surplus at 130 millions, taking into account the home consumption of 55 millions. Adding to this surplus the stocks of old wheat in existence on 1 August about 52 million bushels, the total exportable supply of Australia for 1933-34 is calculated at 180 million bushels (1).

*India.* — The crop harvested in March-April was large enough to give a modest margin for export. It is not very probable, however, that at the current price level on the world market it will give rise to exports of any importance.

*U. S. S. R.* — The publication of production data by the Soviet government was discontinued in 1930. The course of the season was this year in general favourable; careless cultivation was, however, often reported, and, in many districts the fields were infested with weeds. Private information agrees in indicating a large crop of mediocre quality. Production has also been anticipated to be exceptionally large but it may be considered that this information refers rather to harvests in some particularly favoured regions than to the whole of the country. It has been recently stated, moreover, that in several districts it was not possible to transport the crop owing to bad weather and the early commencement of the winter and that some large losses were caused in late areas. During the period from the beginning of August to mid-October this year, shipments from the U. S. S. R., which were nil in August, did not begin to increase in volume until September. Some of these quantities were not directed abroad but to Vladivostok, apparently in order to replenish reserves. Shipments amounted in total to about 8 million bushels, a quantity nearly equal to that of the corresponding period of last year. Shipments to Great Britain do not seem to have given entire satisfaction to British millers owing to the presence of foreign grain mixed with the wheat.

In order to obtain an approximate idea of possible Soviet exports of wheat during the current season, the following facts should be considered:

a) production was abundant but of mediocre quality; b) stocks of old wheat in the interior of the country were reduced to a strict minimum at the beginning of harvest owing to the fact that the situation of food supplies in the

(1) At the last moment a telegram has been received from the Commonwealth Government giving the official forecast of wheat production at 180 million bushels.

country was very difficult in the last months of the preceding season ; c) export of food cereals will be regulated more prudently in order not to incur the risks run last year ; d) mediocre quality constitutes a disadvantage to large sales of Russian wheat on a market already inundated with offers of product of superior quality.

The opinion may therefore be expressed that Russian exports will this year be maintained much below the volume recorded in 1930-31 and 1931-32, while reaching, however, a level above that of last season. It is believed that they will hardly exceed a total of 30 million bushels, with an increase of 14 millions compared with the season 1932-33. It is further considered probable that these exports, instead of being concentrated in the first half of the season, as has normally occurred in recent years, will be distributed more regularly over the months from now until the end of the season.

*European exporting countries.* — Production in 1933 in this group of countries, which includes the four Danubian countries, Poland and Lithuania, has been much larger than the very poor crop of last year, without greatly exceeding the average of 1927-1931. Compared with the 282 million bushels obtained in 1932, production this year is estimated at 430 million bushels, with an increase of about 50%, whereas compared with the average there is an increase of only 18 millions.

At the same time, these countries have obtained a good average crop of maize, which in some cases is consumed by a large part of the population in competition with wheat, and also a good crop rye, which is also largely used as a foodstuff, particularly in Poland, Lithuania and Hungary. Theoretically the exportable supplies of these countries should considerably exceed the average exports of the five seasons 1927-28 to 1931-32, which amounted to about 50 million bushels and reach 65 — 75 million bushels, but, in view of the unprofitable prices on the foreign market on the one hand, and on the other, of the necessity to replenish stocks reduced to the lowest level since the very poor crop of 1932, it is considered more correct to calculate the exportable quantity of this group of countries at 55 million bushels, of which about one half should be attributed to Hungary and the remainder, divided in about equal parts, to Bulgaria, Rumania, Poland and Yugoslavia. This is roughly the quantity which the Danubian countries (excluding Poland), agreed to export at the recent Conference in London.

*North Africa and other countries.* — In the three exporting countries of North Africa production results were mediocre in Algeria and Morocco and below mediocre in Tunis. The exportable surplus for the whole of these countries can only with difficulty equal the 15 million bushels shipped on the average for the period 1927-28 to 1931-32.

Taking account also of the other surplus-producing countries (Turkey, Persia, Iraq, Chile and Uruguay), it may be assumed that the exportable surplus of these countries together will reach 18 million bushels and this figure is considered rather as a maximum than as an actual forecast, especially as, in the present season, North African exports find only with much difficulty an outlet in France, their natural market, which is at present saturated by home production.



Summarizing, the quantities available to meet the demand of the importing countries during the current season may be estimated as follows compared with preceding years.

*Exportable supplies of wheat.*  
(million bushels).

SEASONS	Canada	United States	Argentina	Australia	U.S.S.R.	India	Danubian countries (1)	North Africa (2)	Afloat	Totals
1926-27 . . . . .	338	268	195	130	49	11	44	2	39	1,076
1927-28 . . . . .	404	279	246	96	3	8	31	15	46	1,128
1928-29 . . . . .	513	358	331	136	0	0	34	18	45	1,435
1929-30 . . . . .	309	413	186	100	10	0	55	20	37	1,130
1930-31 . . . . .	400	391	173	200	113	0	50	22	39	1,388
1931-32 . . . . .	336	473	172	192	64	2	84	26	38	1,387
1932-33 . . . . .	469	393	179	200	16	0	13	21	30	1,321
Forecast 1933-34 . . .	370	240	180	180	30	0	55	18	32	1,105

1) Including Poland. — 2) Including the other minor exporting countries.

The total quantities exportable during the current season show a large decrease compared with the past season in correspondence with the marked regression noted in Canada and the United States. Among the other exporting countries only the European countries and the U. S. S. R., have supplies appreciably larger than those of last season.

III. — *Requirements of the importing countries.*

*European countries.* — The principal market for the countries producing a surplus of wheat is Europe, which absorbs on the average 70 % to 80 % of the world wheat exports. This explains the importance which the estimate of probable European requirements has on the market situation.

The abundance of the European crop this year has already been emphasized; it substantially exceeds the maximum obtained last year: 1,670 million bushels against 1,490 in 1932. Of this increase, however, the larger part is due to the exporting countries (Danubian countries, Poland and Lithuania), which harvested in total about 150 millions more than the 282 millions obtained in 1932, a year of extremely deficient production. The increase of production in the importing countries was only 30 millions on that of 1932, but this increase was obtained on a crop which marked a record for all of these countries. The importance of the increase in production of these European importing countries is understood better if the volume of the 1933 crop is compared with that obtained on the average for the five years 1927-1931: the increase then amounts to 266 million bushels or 30 %.

Germany, France and Italy, which, until a few years ago, were among the best customers of the overseas countries, have this year, as last year, obtained

extremely satisfactory results. France and Germany should even have to face a crisis of overproduction, owing to the fact that heavy new crops have been added to the remarkably large stocks carried over from the previous crop. Italy is practically self-sufficient and will need to import only small quantities, probably rather below the 11 million bushels imported last season. Great Britain, Austria, Czechoslovakia, Greece, the Netherlands and Sweden in 1933 harvested their best crops for the post-war period; the other countries had good average crops. Only Spain of all of the European countries announces a crops decidedly below the average. This large production gives rise to the question of how much wheat can be absorbed by the consumption of the Europe and how much should be imported from foreign markets during the course of the present season.

According to their wheat supplies the various European countries may be classified into the following groups.

(A) Countries with adequate or even excessive supplies relative to home requirements: Germany, Spain (the 1933 crop deficit will be compensated for from stocks remaining from the very abundant crop of 1932), Estonia, France, Latvia and Sweden. For this group, which in 1932-33 imported 40 million bushels, imports during the current season may be anticipated to be practically nil.

The possibility must, on the other hand, be taken into account that France will succeed in exporting part of its surplus, the laws recently promulgated for the defence of wheat having made possible the marketing abroad of not negligible quantities of the home product. In practice, though internal prices in France are fixed at a level several times higher than that on the world market, the Government has practically taken upon itself the difference between the two prices, allowing the exporter a bonus equivalent to the import duty on foreign wheat. On the basis of the funds appropriated for the financing of these operations French exports would be enabled to attain a level of about 18 million bushels.

(B) Countries with supplies almost sufficient to cover internal requirements: Austria, Greece, Italy, Portugal and Czechoslovakia. For this group, which imported last year about 60 million bushels, a large decrease in external demand may be expected. Import needs for these countries as a whole may be calculated at 35 million bushels, a reduction of 25 millions on those of last season.

(C) Countries with supplies very much below internal requirements: the United Kingdom, Belgium, the Netherlands, the Irish Free State, Switzerland, Denmark, Finland, Norway. These are countries that, due to the density of their population or to their geographical position, cannot produce all the wheat of which they have need. Even as regards these countries, however, significant increase in production is to be noted.

Their combined production, which in 1927-31 averaged 81 million bushels, rose in 1932 to 92 million and in 1933 to 110 million, an increase of 40 % on the average and due almost entirely to the United Kingdom and the Netherlands. This group of countries imported in 1932-33 about 345 million bushels. If account is taken of the fact that Belgium, the Netherlands, the Irish Free State and

Denmark, following the example of the other European importing countries, initiated this year a policy of protecting the home market, previously free, and if the increase in the 1933 crop in the United Kingdom and the strengthening of the monopoly in Switzerland are also considered, it may be expected that even in this group there will be a reduction, which may be calculated to be at least 20 millions, in import requirements this season as compared with last, so that imports this season would be 325 million bushels

For the 1933-34 season there would therefore be an import demand by the countries of groups *B* and *C* of 360 million bushels, which would be further reduced by some millions if group *A* should, thanks to France, become an exporter.

Such an estimate would seem, however, too low since it would take into account neither the development of consumption in accordance with the annual growth of population and especially with the fall in unemployment over the greater part of Europe, nor the reconstitution of normal stocks in certain countries. It would appear, however, that raising the estimate by some millions, to 375 millions to be precise, would be more in accordance with reality. Such an import would without doubt be the smallest ever recorded in Europe, even, perhaps, during the War; but, considering the difficulties and ever-increasing hinderances to international trade and taking also into account the good quality of this year's wheat, the excellent rye crop and the abundance of fodder cereals and potatoes, it appears very unlikely that European imports will considerably exceed the total estimated.

Of the 375 millions to be imported by Europe 55 millions might be supplied by the Danubian countries, including Poland, about 30 millions by the U. S. S. R. and 15 millions by North Africa while the remaining 275 millions might be shipped from the four great overseas exporters. The forecasts for this season are compared in the following table with the actual results for preceding years.

*Production and apparent consumption of wheat in Europe.*

(Million bushels)

	Importing Countries			Exporting Countries (1)			Total Europe		
	Production	Net Imports	Apparent consumption	Production	Net exports	Apparent consumption	Production	Net imports	Apparent consumption
1925-26 . . . .	1,037	531	1,568	366	49	317	1,403	482	1,885
1926-27 . . . .	865	661	1,526	350	44	306	1,215	617	1,832
1927-28 . . . .	935	657	1,592	339	31	308	1,274	626	1,900
1928-29 . . . .	976	657	1,633	433	34	399	1,409	623	2,032
1929-30 . . . .	1,071	515	1,586	378	55	323	1,449	460	1,909
1930-31 . . . .	915	618	1,533	445	51	394	1,360	567	1,927
1931-32 . . . .	973	613	1,586	462	84	378	1,435	529	1,964
1932-33 . . . .	1,208	446	1,654	282	12	270	1,490	434	1,924
1933-34 (Forec.)	1,240	375	1,615	430	55	375	1,670	320	1,990

(1) Bulgaria, Hungary, Rumania, Yugoslavia, Poland and Lithuania.

*Extra-European countries.* — The quantity of net imports of this group of countries, as may be seen from the approximate calculation given in detail in

the appendix, has in recent seasons shown only small variations round a total of 180 million bushels.

The larger proportion of the countries included in this group consists of the numerous countries and colonies of the tropical and subtropical areas, each of which imports nearly constant and very small quantities of wheat or flour. The only countries that, from year to year, show considerable changes in their wheat requirements are those which, having a home production of some importance, regulate imports on the basis of the volume of the home crop. The chief countries of the latter group are China, Japan, Egypt and the Union of South Africa: Brazil, on the contrary, which is an important market for exports, in general records only small variations from year to year owing to its low home production.

In order to obtain a fairly approximate idea of the probable requirements of the extra-European countries, it should consequently suffice to consider the changes which may be anticipated in the requirements of the four countries just mentioned. China, which among these countries is the principal market, has apparently this year a larger crop than the small one of last year: its import requirements should certainly be reduced. Japan also has obtained a production about 25 % larger than in 1932. Here also a reduction is to be expected in import requirements, especially as the rice crop is also abundant. Egypt, on the contrary, owing to the considerable contraction of wheat sowings in favour of cotton, will have a much smaller production than last year, with a consequent increase in requirements. For the Union of South Africa requirements are estimated to be nearly normal. The opinion may consequently be expressed that in the current season the imports of the extra-European countries should be considerably reduced compared with the past season, by very approximately estimated, 30 million bushels. The import requirements of the extra-European countries are estimated in round figures at 150 million bushels.

*World requirements.* — Summarising, the total quantities necessary to meet the requirements of the importing countries during the season 1933-34 should be 375 million bushels for Europe and 150 millions for the extra-European countries, giving a total of 525 millions.

World wheat requirements estimates published by Broomhall and by the Food Research Institute are a little higher, the former giving 552 millions and the latter 575 millions.

#### IV. — *The situation of supplies and requirements of wheat.*

The statistical situation for the current wheat season, as indicated by the data and information at present available, is characterised by the following facts.

World production in 1933, excluding the U. S. S. R., is considerably below that of last year, and also, though only to a smaller extent, below the average for the five years 1927-31. The production of the U. S. S. R., for which official estimates have been discontinued since 1930, appears to be larger than in 1932, but quality is not good.

*World Production, Trade and Stocks of Wheat*  
(million bushels).

SEASON	World Production				World exportable supplies			World requirements (net exports)	World exportable end of season stocks
	Total r)	Exporting countries	Importing countries	U. S. S. R.	Total	Aggregate excluding U. S. S. R.	U. S. S. R.		
1926-27 . . .	3,396	2,397	999	914	1,076	1,027	49	827	249
1927-28 . . .	3,611	2,534	1,077	797	1,128	1,125	3	809	319
1928-29 . . .	3,938	2,836	1,102	807	1,435	1,435	0	923	512
1929-30 . . .	3,453	2,220	1,223	694	1,130	1,120	10	628	502
1930-31 . . .	3,715	2,653	1,062	989	1,388	1,275	113	824	564
1931-32 . . .	3,672	2,543	1,129	...	1,387	1,323	64	799	588
1932-33 . . .	3,710	2,352	1,358	...	1,321	1,305	16	629	692
Forecast									
1933-34 . . .	3,470	2,085	1,385	...	1,105	1,075	30	525	580

(1) Excluding U. S. S. R., China, Turkey, Persia and Iraq.

Generalizing, the group of exporting countries as a whole appears to have a crop smaller not only than the already bad one of 1932 but also than any other since the War. The total production of the importing countries seems on the other hand to be the largest so far obtained.

The decrease in the total crop of the exporting countries is due to the combined effect of the reduction in areas cultivated and the unfavourable weather, which reduced unit-yields. The increase in the production of the importing countries is due to a slight extent to a small rise in the area under the crop and almost entirely to favourable weather and steady improvement in methods, which has resulted in very high unit-yields.

World exportable supplies, taking into account the very heavy stocks at the beginning of the season, are below those of last year by about 220 million bushels in consequence of the exceptionally poor crop in the exporting countries. They are estimated at 1,105 million bushels, of which 689 millions represent exportable stocks from the old crop and 416 millions the new crop surplus.

The probable requirements of the importing countries are also much smaller than in 1932-33; a reduction in European demand by 70 million bushels is expected, due not only to the qualitatively and quantitatively excellent crop of wheat, to the abundant crop of rye and the good crops of maize, barley, oats and potatoes but also to the large stocks of wheat in several countries and the increasingly strict regulation of external trade by a growing number of producing countries. A reduction of 30 million bushels is also expected in the demand from extra-European countries, due especially to Far Eastern markets. On the whole world requirements for import are placed at 525 million bushels, a decrease of 100 million on those of the past season.

Comparing on the one hand the needs of importing countries (525 millions) for the current season with the exportable supplies of the exporting countries on the other, it appears that the export surplus from the 1933 crop (416 millions)

is inadequate to cover the probable demand of the importing countries. It follows that old crop stocks will have to be drawn upon to the extent of about 110 millions.

From these data it may be concluded that exportable stocks which at the beginning of the season had attained 690 million bushels, a total that represents the greatest surplus accumulation so far recorded, will undergo in the course of the present season an appreciable reduction, estimated at about 110 million bushels so that on 1 August 1934 they will amount to 580 millions. There is thus a prospect of a not insignificant amelioration in the stocks situation, which has been further aggravated each year since 1927-28.

To bring any tangible advantage to the wheat market this amelioration must, however, continue. The recent conference of London has succeeded in reaching an agreement between the exporting and importing countries that will not fail to attain this end.

G. CAPONE.

## APPENDIX

In the following notes are given the detailed data on which the estimates contained in the present study are based.

### I. — EXPORTABLE STOCKS REMAINING FROM PREVIOUS PRODUCTION.

The exportable stocks residual from the previous production in existence on 1 August 1932 compared with those for the preceding five seasons have been calculated, for the four large exporting countries only, in the manner indicated below. The stocks in existence in the other exporting countries are excluded because there is an absence of data for exactly estimating them and also because normally the variations in these stocks from year to year are of negligible importance.

CANADA. — Official statistics record the subjoined estimates of residual stocks of wheat and flour in Canada on 1 August. In addition to these stocks there must also be taken into account those of Canadian grain admitted free into the United States and lying there on 1 August. They amounted to the following quantities in million bushels.

	1927	1928	1929	1930	1931	1932	1933
In Canada . . . . .	48	78	104	111	134	132	212
In U. S. A. . . . .	5	14	24	17	6	5	7
TOTAL STOCKS . . .	53	92	128	128	140	137	219
Less minimum carry-over . . . . .	9	9	9	9	9	9	9
EXPORTABLE STOCKS . . .	44	83	119	119	131	128	210

UNITED STATES. — The official statistics record the stocks of home grown wheat in the United States on 1 July. In addition to these stocks there must also be taken into account those of U.S. A. grain admitted free into Canada and lying there on 1 July. These were as follows in million bushels.

Stocks	1927	1928	1929	1930	1931	1932	1933
On farms . . . . .	27	20	45	59	37	90	80
In interior mills and elevators . . . . .	22	19	42	60	30	42	62
Commercial wheat in store . . . . .	21	42	95	109	204	168	124
In merchant mills and elevators . . . . .	37	32	48	47	22	65	95
In transit to merchant mills . . . . .	11	11	16	15	12	10	16
Stored for others by merchant mills . . . . .	...	...	...	13	18	7	10
Flour in terms of wheat . . . . .	18	18	19	18	14	16	14
Total . . . (1) 140 (1) 150 (1) 270				321	337	398	401
U. S. A. wheat in bond in Canada . . . . .	1	2	3	5	15	16	4
TOTAL STOCKS . . . . .	141	152	273	326	352	414	405
Less minimum carry-over . . . . .	55	55	55	55	55	55	55
EXPORTABLE STOCKS . . . . .	86	97	218	271	297	359	350

(1) Raised to represent all items and rounded.

ARGENTINA. — Taking into account exports and stocks on 1 January the exportable stocks on 1 August of each year were as follows in million bushels.

	1927	1928	1929	1930	1931	1932	1933
Exportable stocks . . . . .	49	68	109	35	49	33	48

AUSTRALIA. — Taking into account exports and stocks on 1 December exportable stocks on 1 August are indicated below in million bushels.

	1927	1928	1929	1930	1931	1932	1933
Exportable stocks . . . . .	24	20	29	38	49	38	52

## II. — CONSUMPTION OF THE EXPORTING COUNTRIES.

In the following tables are given for each country the data on which the figures of home consumption in the four large exporting countries have been based.

NORTH AMERICA. — On the basis of the official data of production, commerce and stocks, wheat consumption in Canada and the United States in recent seasons may be calculated as follows in million bushels. For Canada the figure of production in 1931, having been officially admitted to be an underestimate, has been adjusted by the addition of 18 million bushels.

<i>Canada</i>	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33
Production . . . . .	480	567	305	421	321	455
+ Interior Stocks on 1 August . . . . .	18	78	104	111	134	132
= Available supplies on 1 August . . . . .	528	615	409	532	455	587
— Season's exports . . . . .	331	404	181	258	207	264
— Interior Stocks on 31 July . . . . .	78	104	111	134	132	212
= Consumption . . . . .	119	137	114	140	116	111
<i>United States</i>						
Production . . . . .	875	926	813	857	900	726
+ Interior Stocks on 1 July . . . . .	140	150	270	321	337	398
= Available supplies on 1 July . . . . .	1,015	1,076	1,083	1,178	1,237	1,124
— Season's exports . . . . .	193	145	143	115	126	36
— Interior Stocks on 30 June . . . . .	150	270	321	337	398	401
= Consumption . . . . .	672	661	619	726	713	687

ARGENTINA. — On the basis of official data, the consumption in the last five years is estimated as follows :

	1927	1928	1929	1930	1931	1932
Million bushels . . . . .	74	77	86	86	90	90

AUSTRALIA. — On the basis of official data for production and trade the consumption in the last five years is estimated as follows.

	1927	1928	1929	1930	1931	1932
Million bushels . . . . .	44	50	51	55	55	55

### III. — EXPORTS.

The quantities of wheat (with flour reduced to the corresponding equivalents in grain) exported during the last five grain seasons (1 August-31 July) from all the principal exporting countries are given in the following table. The data refer to net exports, that is, exports less imports.

#### *World wheat exports.*

Country	1927/28	1928/29	1929/30	1930/31	1931/32	1932/3
Canada . . . . .	323	395	191	269	208	259
United States . . . . .	182	148	140	93	120	43
Argentina . . . . .	178	222	151	124	140	131
Australia . . . . .	69	107	61	151	154	148
India . . . . .	8	(1) 25	0	(1) 5	2	(1) 1
Bulgaria . . . . .	2	0	(1) 1	6	11	1
Hungary . . . . .	21	25	29	18	18	7
Poland and Lithuania . . . . .	(1) 8	(1) 3	0	5	3	1
Rumania . . . . .	7	0	3	16	37	0
Yugoslavia . . . . .	1	9	23	6	15	1
Turkey, Persia and Iraq . . . . .	1	(1) 6	0	3	4	1
Algeria . . . . .	5	3	5	10	6	8
Tunis . . . . .	1	5	6	6	9	5
Morocco . . . . .	3	4	4	2	8	6
Chile and Uruguay . . . . .	5	5	5	2	0	(1) 3
TOTALS . . . . .	806	923	618	711	735	613
U. S. S. R. . . . .	3	(1) .5	10	113	64	16
WORLD EXPORTS . . . . .	809	923	628	824	799	629

(1) Net imports, not included in the totals.

Taking account, however, of the fact that for several years part of the exports from Canada and the United States has not actually been shipped overseas but has passed from one to the other of these countries to remain in store at its destination, there has been deducted from the total exports above indicated, the amounts of which are increased from the beginning to the end of each season, the stores of Canadian wheat in the United States and those of United States wheat in Canada. On the other hand the inverse operation has been carried out when the amounts stored have decreased.



IV. — IMPORTS AND APPARENT CONSUMPTION OF EUROPE.

The data of production, net imports and exports and apparent consumption of the various European countries, grouped as importing and exporting countries respectively, are given in the following table together with the preliminary estimates of production for 1932. The figures for wheat include flour reduced to its equivalent in grain.

*Production and apparent consumption of Europe.*

(Million bushels).

COUNTRIES	Pro- duction in 1930	Imports 1930-31	Appar- ent con- sump- tion 1930-31	Pro- duction in 1931	Imports 1931-32	Appar- ent con- sump- tion 1931-32	Pro- duction in 1932	Imports 1932-33	Appar- ent con- sump- tion 1932-33
<i>A. — Importing countries :</i>									
Germany . . . . .	139	31	170	155	23	178	184	5	189
Austria . . . . .	12	16	28	11	13	24	12	13	25
Belgium and Luxemburg . . . . .	14	49	63	14	47	61	16	39	55
Denmark . . . . .	10	11	21	10	17	27	11	12	23
Spain . . . . .	147	0	147	134	11	145	184	0	184
Estonia . . . . .	2	1	3	2	0	2	2	0	2
Finland . . . . .	1	5	6	1	4	5	1	4	5
France . . . . .	228	61	289	264	77	341	334	33	367
Gr. Brit. and N. Ireland . . . . .	42	225	267	38	240	278	44	215	259
Greece . . . . .	10	24	34	11	24	35	20	20	40
Irish Free State . . . . .	1	19	20	1	20	21	1	18	19
Italy . . . . .	210	81	291	245	33	278	277	11	288
Latvia . . . . .	4	2	6	3	1	4	5	0	5
Norway . . . . .	1	8	9	1	8	9	1	8	9
Netherlands . . . . .	6	35	41	7	31	38	14	27	41
Portugal . . . . .	14	3	17	13	3	16	18	1	19
Sweden . . . . .	20	5	25	18	7	25	26	3	29
Switzerland . . . . .	4	23	27	4	27	31	4	23	27
Czechoslovakia . . . . .	50	17	67	41	25	66	54	12	66
Other countries . . . . .	—	2	2	—	2	2	—	2	2
<i>Totals . . . . .</i>	<i>915</i>	<i>618</i>	<i>1,533</i>	<i>973</i>	<i>613</i>	<i>1,586</i>	<i>1,208</i>	<i>446</i>	<i>1,654</i>
<i>B. — Exporting countries :</i>									
		<i>Exports</i>			<i>Exports</i>			<i>Exports</i>	
Bulgaria . . . . .	57	6	51	64	11	53	51	3	48
Hungary . . . . .	84	18	66	73	18	55	64	7	57
Rumania . . . . .	131	16	115	135	37	98	56	0	56
Yugoslavia . . . . .	80	6	74	99	15	84	53	1	52
Poland . . . . .	82	4	78	83	3	80	49	1	48
Lithuania . . . . .	11	1	10	8	0	8	9	0	9
<i>Totals . . . . .</i>	<i>445</i>	<i>51</i>	<i>394</i>	<i>462</i>	<i>84</i>	<i>378</i>	<i>282</i>	<i>12</i>	<i>270</i>
		<i>Imports</i>			<i>Imports</i>			<i>Imports</i>	
<b>GENERAL TOTAL . . . . .</b>	<b>1,360</b>	<b>567</b>	<b>1,927</b>	<b>1,435</b>	<b>529</b>	<b>1,964</b>	<b>1,490</b>	<b>434</b>	<b>1,924</b>

(1) Exports.

V. — EXTRA-EUROPEAN IMPORTS.

The imports of extra-European countries are calculated in a somewhat approximate fashion by taking the difference between aggregate exports and imports of European countries and also the quantities afloat at the beginning and end of each season.

It should be observed that the calculations do not make any allowance for loss in weight during transit or from handling at shipment and at discharge, for the consequences of sea accidents or for quantities consumed by crews and passengers. Thus the actual shipments to non-European countries are certainly below the quantities indicated by the following calculations. It may, however, be assumed that the quantities which fail to reach their destination do not vary much from year to year, so that the procedure adopted may be adjudged generally as sufficiently exact.

The data forming the basis of this calculation are given below in million bushels.

	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33
World exports (including U. S. S. R.) . . . . .	809	923	628	824	799	629
+ Quantity afloat at the beginning of the season. . .	46	45	80	39	38	30
— Quantity afloat at the end of the season . . . . .	45	80	39	38	30	32
= World imports . . . . .	810	888	669	825	807	627
— Quantity imported into European countries . . . . .	657	657	515	618	613	446
= Quantity imported by extra-European countries. . . . .	153	231	154	207	194	181

It should be noted that the quantity afloat on 1 August 1929 was really 37 million bushels and not 80 million. It has been considered opportune to make this modification in the above estimate since at the beginning of August 1929 large quantities of wheat exported to Europe and having reached their destinations had not yet been recorded in the import statistics.

## CEREALS

*Germany* : Growth was generally hindered in September by hot dry weather. At the end of the month sowings of winter cereals had only been partly completed. Almost everywhere heavy infestation with field mice is reported.

*Austria* : During September the weather was rather rainy and temperatures rather high, except on some of the first ten days. At the end of September in the mountain regions, spring cereals were still in the fields. Cold weather in the first ten days checked ripening and subsequently rainfall hindered harvesting. In the other regions, threshing of cereals proceeded normally with satisfactory results in all respects. Sowings of winter cereals began on a larger scale only during the latter half of September owing to the abundant rains. At the end of September, barley and winter rye sowings had been nearly finished. Winter wheat had already germinated nearly everywhere and was growing well.

*Bulgaria* : Weather conditions in September were rather favourable for the harvesting and transport of cereals. The latest estimate of area sown to mixed grain this year (217,000 acres) is 15,000 acres below the first estimate. Compared with last year and the average of 1927-1931 the decrease is 2.1 % and 11.2 % respectively. Production this year (2,568,000 centals) on the contrary, exceeds the first estimate by 185,000 centals and is also 22.4 % and 3.2 % respectively larger than the production of last year and the average of 1927-31.

For spelt the latest estimate gives an increase in area of nearly 5,000 acres and an increase in production of 126,000 centals on the first estimate. Compared with last year, and the average of 1927-1931, the area is larger by 4.9 % and 13.0 % and production by 1.1 % and 45.4 %.

*Estonia* : Winter cereal sowings have been effected under good conditions. Thanks to the favourable weather, sowings have come up well and growth is normal.

*Irish Free State* : The weather during the harvest period was ideal for field work and the crops were saved in excellent condition. Crops of wheat and barley have provided average yields with grain of excellent quality. Owing to lack of development — due to drought — the yield of oats is somewhat below average but the quality is good. Work for the autumn sowings is only now commencing. The weather so far is excellent for the purpose. The ground is ordinarily too hard and dry for ploughing except on land which has been under cultivated crops this season.

*France* : The rain toward the end of September and early in October and the fine weather in the first part of October allowed autumn preparations and first sowings of oats and rye to be carried out in very good conditions. In the east, however, moisture was still insufficient up to mid-October. In some districts sowings appear more extensive than last year. The official estimate of wheat production is rather below that made by the trade, which had the same criticism to make concerning that of last year. Threshing was generally completed in the south, southwest and west but was very backward in the Paris region and the north owing to the pressure of work in the fields. The poor crops of potatoes, mangels and maize will probably lead to increased consumption of cereals for both food and feed.

## Cereals.

COUNTRIES	1) AREA					2) PRODUCTION											
	1933	1932	Average 1927 to 1931	% 1933/34	Aver. 1932/1933 = 100	1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933/34	Aver. 1932/1933 = 100				
	1933/34	1932/33	1927/28 to 1931/32	1933/34		1932/33	1927/28 to 1931/32	1933/34	1932/33	1927/28 to 1931/32	1933/34	1932/33					
	1,000 acres					1,000 centals					1,000 bushels						
WHEAT.																	
Germany . . . .	5,728	5,635	4,460	101.7	128.4	121,748	110,299	81,594	202,910	183,828	135,987	110.4	149.2				
Austria . . . .	547	536	512	101.9	106.8	10,435	7,405	7,134	17,391	12,342	11,890	140.9	146.3				
Belgium . . . .	366	386	390	94.9	94.0	8,171	9,226	8,853	13,617	15,376	14,754	88.6	92.3				
Bulgaria . . . .	3,051	3,078	2,841	99.1	107.4	35,315	30,332	29,474	58,858	50,553	49,123	116.4	119.8				
Spain . . . . .	11,047	11,249	10,880	98.2	101.5	79,164	110,526	84,342	131,937	184,206	140,566	71.6	93.9				
Estonia . . . .	163	128	82	127.5	199.4	1,257	1,251	810	2,094	2,085	1,350	100.5	155.2				
*Irish Free State .	52	21	28	243.1	183.1	...	498	680	...	831	1,133	...	...				
Finland . . . .	65	59	41	111.7	160.1	959	890	578	1,598	1,483	963	107.8	166.0				
France . . . . .	13,359	13,429	13,096	99.5	102.0	203,202	200,117	166,429	338,663	333,522	277,376	101.5	122.1				
Engl. and Wales .	1,660	1,288	1,381	128.9	120.2	35,146	24,752	26,844	58,576	41,253	44,740	142.0	130.9				
*Scotland . . . .	78	52	56	149.8	139.5	...	1,344	1,299	...	2,240	2,165	...	...				
*N. Ireland . . .	6	3	4	188.9	139.9	...	73	98	...	121	163	...	...				
Greece . . . . .	1,732	1,480	1,338	117.1	129.4	17,148	12,158	7,011	28,580	20,263	11,685	141.0	244.6				
Hungary . . . .	3,936	3,793	4,014	103.8	98.0	54,000	38,678	48,963	89,999	64,462	81,603	139.6	110.3				
*Italy 1) . . . .	12,517	12,237	12,031	102.3	104.0	...	166,300	136,684	...	277,161	227,802	...	...				
Latvia . . . . .	309	255	170	121.1	182.1	963	3,175	1,791	6,605	5,292	2,984	124.8	221.3				
Lithuania . . . .	499	509	436	97.9	114.3	5,236	5,654	4,871	8,727	9,423	8,118	92.6	107.5				
Luxemburg . . . .	33	31	28	108.2	117.1	508	432	305	846	719	508	117.6	166.7				
Malta . . . . .	10	10	9	101.0	104.4	183	181	175	305	301	291	101.2	104.6				
Norway . . . . .	28	28	28	101.0	99.2	462	450	416	770	749	693	102.7	111.0				
Netherlands . . .	332	287	150	111.7	221.7	8,437	8,217	3,812	14,062	13,694	6,353	102.7	221.3				
Poland . . . . .	4,186	4,265	3,727	98.1	112.3	41,006	29,684	42,206	68,342	49,472	70,343	138.1	97.2				
Portugal . . . .	1,463	1,123	...	...	...	8,895	10,883	6,795	14,825	18,158	11,325	81.7	130.9				
Rumania . . . .	7,772	7,091	7,694	109.6	101.0	68,344	33,322	69,373	113,904	55,536	115,620	205.1	98.5				
Sweden . . . . .	799	746	605	107.1	132.1	16,711	15,900	10,862	27,851	26,500	18,102	105.1	155.9				
Switzerland 2) .	185	181	176	102.1	105.1	3,832	3,241	3,335	6,386	5,402	5,559	118.2	114.9				
Czechoslovakia .	2,273	2,092	1,957	108.7	116.2	39,461	32,242	29,377	65,767	53,736	48,961	122.4	134.3				
Yugoslavia . . .	...	5,251	5,089	...	...	54,013	32,067	52,078	90,021	53,444	86,795	168.4	103.7				
Total Europe . .	\$ 64,794	63,280	60,227	102.4	107.6	817,596	721,082	637,428	1,362,634	1,201,779	1,145,689	113.4	118.5				
*U. S. S. R. . . w)	28,058	32,337	22,107	86.8	126.9	...	...	...	...	...	...	...	...				
Canada . . . . .	25,987	27,182	24,587	95.6	105.7	169,663	273,000	251,149	282,771	455,000	418,582	62.1	67.6				
United States 1) w)	26,802	33,635	39,333	79.7	68.1	204,213	277,007	372,499	340,355	461,679	620,832	73.7	54.8				
Mexico . . . . .	18,077	21,517	20,307	84.0	89.0	104,677	158,762	152,196	174,461	264,604	253,661	65.9	68.8				
Mexico . . . . .	1,179	1,104	1,321	106.8	89.3	7,052	5,795	7,431	11,753	9,658	12,385	121.7	94.9				
Total North Amer.	72,45	83,438	85,548	86.3	84.2	485,605	714,564	783,275	809,340	1,190,941	1,305,460	68.0	62.0				
Korea . . . . .	794	793	866	100.0	91.6	4,983	4,983	5,194	8,304	8,305	8,657	100.0	95.9				
India . . . . .	32,992	33,803	32,062	97.6	102.9	211,725	202,138	201,824	352,875	336,896	336,373	104.7	104.9				
Japan . . . . .	1,500	1,247	1,201	120.3	124.9	23,597	18,802	18,114	39,328	31,336	30,189	125.5	130.3				
Syria and Lebanon	1,160	1,191	1,182	97.4	98.1	7,211	6,229	8,631	12,018	10,382	14,385	115.8	83.5				
Turkey . . . . .	...	8,555	6,663	...	...	48,502	41,607	48,524	80,835	69,344	80,872	116.6	100.0				
Total Asia . . .	\$ 45,001	45,589	41,974	98.7	107.2	296,018	273,759	282,287	493,360	456,263	470,476	108.1	104.9				
Algeria . . . . .	4,001	3,736	3,718	107.1	107.6	16,281	17,542	18,007	27,135	29,236	30,012	92.8	90.4				
Egypt . . . . .	1,426	1,162	1,606	80.9	88.8	23,971	31,552	25,524	39,951	52,586	42,339	76.0	93.9				
Eritrea 3) . . . .	9	15	21	58.3	41.5	54	88	20	90	147	33	61.2	269.2				
*Kenya 4) . . . .	39	30	67	128.2	57.9	...	127	391	...	212	651	...	...				
French Morocco .	3,026	2,713	2,695	111.5	112.3	15,172	16,782	15,738	25,286	27,970	26,229	90.4	96.4				
Tunis . . . . .	1,977	2,392	1,802	82.6	109.7	5,512	10,472	7,015	9,186	17,453	11,692	52.6	78.6				
Total Africa . .	10,439	10,618	9,842	98.3	106.1	60,990	76,436	66,304	101,648	127,392	110,505	79.8	92.0				
*Argentina . . . .	5) 18,904	5) 19,791	5) 20,505	95.5	92.2	...	141,228	149,511	...	235,376	249,180	...	...				
*Uruguay . . . .	1,234	947	1,074	130.2	114.9	...	...	7,138	...	...	11,897	...	...				
*Australia . . . .	14,500	15,346	15,000	94.5	96.7	...	127,439	97,078	...	212,398	161,794	...	...				
GRAND TOTALS .	\$ 192,279	202,925	197,591	94.8	97.3	1,660,209	1,785,841	1,819,294	2,766,982	2,976,375	3,032,136	93.0	91.3				
RYE.																	
Germany . . . .	11,179	10,996	11,434	101.7	97.8	192,892	184,385	166,978	344,451	329,261	298,177	104.6	115.5				
Austria . . . . .	977	944	934	103.5	104.6	17,957	13,651	11,168	32,066	24,377	19,942	131.5	160.8				
Belgium . . . .	553	562	567	98.4	97.5	12,331	13,251	11,904	22,019	23,662	21,257	93.1	103.6				
Bulgaria . . . .	523	544	549	96.1	95.3	6,084	5,676	5,110	10,865	10,136	9,126	107.2	119.1				
Spain . . . . .	1,458	1,516	1,588	96.2	91.8	11,192	14,507	12,151	19,986	25,905	21,699	77.2	92.1				

COUNTRIES	†) AREA					†) PRODUCTION							
	1933 1933/34	1932 1932/33	Average 1927 to 1931	% 1933		1933 1933/34	1932 1932/33	Average 1927 to 1931	1933 1933/34	1932 1932/33	Average 1927 to 1931	% 1933	
			1927/28 to 1931/32	1932 1932/33 = 100	Aver.			1927/28 to 1931/32			1932 1932/33 = 100	Aver.	
			1932 1932/33 = 100					1932 1932/33 = 100					
			1932 1932/33 = 100					1932 1932/33 = 100					
1,000 acres			1,000 centals			1,000 bushels							
Estonia . . . .	376	364	351	103.3	107.0	4,255	3,983	3,664	7,598	7,113	6,543	106.8	116.1
Finland . . . .	563	538	533	104.6	105.8	7,855	7,261	6,719	14,027	12,966	11,998	108.2	116.9
France . . . . .	1,714	1,732	1,853	98.9	92.5	20,562	18,971	18,190	36,718	33,876	32,482	108.4	113.0
Greece . . . . .	191	163	142	117.0	134.1	1,823	1,472	920	3,255	2,629	1,643	123.8	198.0
Hungary . . . .	1,674	1,553	1,582	107.8	105.8	20,827	16,969	15,283	37,191	30,301	27,291	122.7	136.3
Italy 1) . . . .	285	288	306	98.9	93.2	3,805	3,535	3,587	6,794	6,313	6,406	107.6	106.1
Latvia . . . . .	637	593	618	107.5	103.2	7,744	6,604	5,392	13,828	11,793	9,629	117.3	143.6
Lithuania . . .	1,210	1,194	1,194	101.3	101.3	14,054	11,653	11,584	25,096	20,808	20,686	120.6	121.3
Luxembourg . .	20	20	18	102.6	114.7	307	278	217	549	496	388	110.7	141.6
Norway . . . . .	16	16	19	96.2	83.4	246	292	288	438	522	515	84.0	85.2
Netherlands . .	406	410	476	99.2	85.4	7,665	7,650	8,756	13,688	13,661	15,636	100.2	87.5
Poland . . . . .	14,312	13,951	14,120	102.6	101.4	140,876	134,713	139,631	251,565	240,560	249,342	104.6	100.9
Portugal . . . .	...	366	411	...	...	2,024	3,590	2,610	3,615	6,411	4,660	56.4	77.6
Rumania . . . .	944	861	834	109.7	113.1	8,819	5,888	7,428	15,747	10,513	13,264	149.8	118.7
Sweden . . . . .	545	516	621	105.7	87.8	10,229	9,573	8,587	18,267	17,094	15,333	106.9	119.1
Switzerland . .	46	46	48	100.8	95.4	827	829	866	1,476	1,481	1,547	99.7	95.4
Czechoslovakia .	2,595	2,585	2,545	100.4	101.9	43,398	47,970	36,896	77,497	85,661	65,885	90.5	117.6
Total Europe . .	\$) 40,590	39,758	40,743	102.1	99.6	535,772	512,701	477,929	956,736	915,539	853,449	104.5	112.1
*U. S. S. R. w) . .	63,003	64,402	64,292	97.8	98.0	...	...	...	...	...	...	...	...
Canada . . . . .	584	774	960	75.0	60.8	3,594	5,005	7,917	6,418	8,938	14,138	71.8	45.4
United States . .	2,716	3,326	3,254	81.7	83.5	12,945	22,629	22,608	23,116	40,409	40,371	57.2	57.3
Total North Amer.	3,300	4,100	4,214	80.5	78.3	16,539	27,634	30,525	29,534	49,347	54,509	59.9	54.2
Turkey . . . . .	...	504	656	...	...	5,512	4,368	5,310	9,842	7,800	9,482	126.2	103.8
Algeria 5) . . . .	4	3	4	118.6	96.2	17	15	29	30	27	53	111.3	56.2
*Argentina . . . .	5) 1,730	5) 1,624	5) 1,232	106.5	140.4	...	7,275	3,999	...	12,992	7,141	...	...
GRAND TOTALS . .	\$) 44,398	44,365	45,617	100.1	97.3	557,840	544,718	513,793	996,142	972,713	917,493	102.4	108.6

## BARLEY.

Germany . . . .	3,917	3,875	3,799	101.1	103.1	75,328	70,872	66,774	156,936	147,652	139,115	106.3	112.8
Austria . . . .	418	416	398	100.5	105.1	8,212	6,043	5,615	17,109	12,590	11,698	135.9	146.3
Belgium . . . .	80	94	77	85.8	103.9	1,860	2,256	1,844	3,876	4,701	3,842	82.4	100.9
Bulgaria . . . .	577	568	601	101.6	96.1	7,934	6,769	7,065	16,529	14,102	14,720	117.2	112.3
Spain . . . . .	4,521	4,837	4,516	93.5	100.1	46,582	63,632	44,731	97,047	132,569	93,192	73.2	104.1
Estonia . . . . .	256	266	279	96.3	91.8	1,726	2,212	2,500	3,595	4,608	5,209	78.0	69.0
*Irish Free State	117	103	120	113.1	97.6	...	2,388	2,768	...	4,974	5,768	...	...
Finland . . . .	314	308	280	101.7	112.0	3,629	3,944	3,261	7,560	8,218	6,795	92.0	111.3
*France . . . . .	6) 1,813	1,779	1,831	101.9	99.0	...	24,008	24,084	...	50,017	50,176	...	...
Engl. and Wales .	751	961	1,081	78.2	69.5	13,955	17,181	19,663	29,073	35,793	40,965	81.2	71.0
*Scotland . . . .	61	69	105	88.6	58.2	...	1,478	2,092	...	3,080	4,359	...	...
*N. Ireland . . .	1	1	2	135.7	81.9	...	26	39	...	53	81	...	...
Greece . . . . .	550	519	481	105.9	114.2	5,089	4,616	3,288	10,601	9,618	6,850	110.2	154.8
Hungary . . . . .	1,203	1,160	1,100	103.7	109.4	16,987	15,854	12,977	35,390	33,030	27,037	107.1	130.9
Italy 1) . . . . .	510	520	569	98.1	89.7	4,993	5,456	5,261	10,402	11,367	10,961	91.5	94.9
Latvia . . . . .	456	457	432	99.8	105.6	4,051	4,247	3,476	8,439	8,369	7,242	95.4	116.5
Lithuania . . .	512	497	487	103.0	105.1	5,060	5,268	4,626	10,541	10,975	9,638	96.0	109.4
Luxembourg . .	8	8	9	93.1	81.3	116	104	123	242	716	256	112.1	94.5
Malta 7) . . . .	6	6	7	92.1	84.3	119	129	143	248	269	297	91.9	83.5
Norway . . . . .	142	137	141	103.6	100.8	2,282	2,608	2,253	4,754	5,435	4,693	87.1	101.3
Netherlands . .	44	49	72	88.4	60.5	1,186	1,301	1,933	2,471	2,710	4,027	91.2	61.4
Poland . . . . .	2,928	2,982	2,984	98.2	98.1	30,424	30,883	32,640	63,384	64,341	68,001	98.5	93.2
Portugal . . . .	...	192	174	...	...	690	1,151	937	1,438	2,398	1,953	60.0	73.7
Rumania . . . .	4,473	4,416	4,676	101.3	95.7	41,888	32,345	41,001	87,268	67,387	85,421	129.5	102.2
Sweden . . . . .	279	293	306	95.2	90.9	4,226	5,234	4,939	8,805	10,904	10,290	80.7	85.6
Switzerland . .	17	17	17	98.8	99.8	295	285	270	615	593	562	103.8	109.5
Czechoslovakia .	1,642	1,762	1,766	93.2	93.0	26,744	33,177	28,228	55,717	69,121	58,809	80.6	94.7
Total Europe . .	\$) 23,796	24,340	24,252	97.8	98.1	303,376	315,567	293,548	632,040	657,444	611,573	96.1	103.3
*U. S. S. R. w) .	711	872	1,009	81.6	70.5	...	...	...	...	...	...	...	...
Canada . . . . .	3,646	3,758	4,728	97.0	77.1	30,860	38,771	51,665	64,291	80,773	107,637	79.6	59.7
United States . .	10,540	13,212	11,947	79.8	88.2	76,676	143,976	130,034	159,741	299,950	270,905	53.3	59.0
Total North Amer.	14,186	16,970	16,675	83.6	85.1	107,536	182,747	181,699	224,032	380,723	378,542	58.8	59.2

COUNTRIES	†) AREA					†) PRODUCTION									
	1933	1932	Average	% 1933		1933	1932	Average	1933	1932	Average	% 1933		1933	1933/34
	1933/34	1932/33	1927 to 1931	1932	Aver.	1933/34	1932/33	1927 to 1931	1933/34	1932/33	1927 to 1931	1932	Aver.	1933/34	1933/34
	1933/34	1932/33	1927 to 1931	1932	Aver.	1933/34	1932/33	1927 to 1931	1933/34	1932/33	1927 to 1931	1932	Aver.	1933/34	1933/34
	1,000 acres					1,000 centals					1,000 bushels				
Korea . . . . .	2,501	2,446	2,297	102.3	108.8	20,979	21,161	18,124	43,708	44,086	37,759	99.1	115.8	99.1	115.8
Japan . . . . .	1,940	2,107	2,198	92.1	88.2	34,042	37,316	37,758	70,922	77,744	78,664	91.2	90.2	91.2	90.2
Syria & Lebanon . . . . .	752	794	824	94.8	91.3	6,094	4,463	8,701	12,696	9,299	18,127	136.5	70.0	136.5	70.0
Turkey . . . . .	...	3,401	3,256	...	...	28,660	25,679	28,035	59,710	53,499	58,407	111.6	102.2	111.6	102.2
Total Asia . . . . .	§) 8,594	8,748	8,585	98.2	100.1	89,775	88,619	92,618	187,036	184,628	192,957	101.3	96.9	101.3	96.9
Algeria . . . . .	3,277	3,339	3,427	98.1	95.6	14,165	14,833	17,277	29,510	30,902	35,995	95.5	82.0	95.5	82.0
Egypt . . . . .	292	366	359	79.9	81.5	4,434	5,792	5,340	9,237	12,067	11,126	76.5	83.0	76.5	83.0
Eritrea . . . . .	69	96	52	70.0	132.1	432	617	167	900	1,286	347	70.0	259.3	70.0	259.3
French Morocco . . . . .	3,439	3,298	3,008	104.3	114.3	23,060	22,630	21,725	48,042	47,147	45,261	101.9	106.1	101.9	106.1
Tunis . . . . .	865	1,507	1,197	57.4	72.2	2,646	7,496	4,010	5,512	15,616	8,355	35.3	66.0	35.3	66.0
Total Africa . . . . .	7,942	8,609	8,043	92.3	98.7	44,737	51,368	48,519	93,201	107,018	101,084	87.1	92.2	87.1	92.2
*Argentina . . . . .	§) 1,730	§) 1,520	§) 1,368	113.8	126.5	...	15,432	7,803	...	32,151	16,256	...	...	...	...
*Uruguay . . . . .	10	10	10	101.0	104.0	...	...	74	...	...	153	...	...	...	...
GRAND TOTALS . . . . .	§) 54,518	58,667	57,555	92.9	94.7	545,424	638,301	616,384	1,136,309	1,329,813	1,284,156	85.4	88.5	85.4	88.5

## OATS.

Germany . . . . .	7,863	8,117	8,578	96.9	91.7	151,685	146,613	143,683	474,013	458,163	449,005	103.5	105.6	103.5	105.6
Austria . . . . .	755	784	759	96.8	95.5	11,995	10,020	9,192	37,485	31,312	28,726	122.0	130.5	122.0	130.5
Belgium . . . . .	733	712	694	102.9	105.6	16,348	16,763	14,894	51,088	52,385	46,544	97.5	109.8	97.5	109.8
Bulgaria . . . . .	331	281	330	117.7	100.4	3,432	2,488	2,348	10,723	7,777	7,339	137.9	146.1	137.9	146.1
Spain . . . . .	1,599	1,926	1,926	83.0	82.0	12,415	18,309	13,588	38,798	57,215	42,461	67.8	91.4	67.8	91.4
Estonia . . . . .	343	356	357	96.2	95.9	2,400	2,869	2,943	7,500	8,966	9,197	83.7	81.5	83.7	81.5
*Irish Free State . . . . .	650	632	645	102.8	100.7	...	14,049	14,103	...	43,904	44,062	...	...	...	...
Finland . . . . .	1,110	1,124	1,106	98.7	100.4	13,193	14,759	13,291	41,226	46,122	41,533	89.4	99.3	89.4	99.3
*France . . . . .	8,383	8,371	8,547	100.1	98.1	...	106,221	106,172	...	331,938	331,785	...	...	...	...
*England and Wales . . . . .	1,494	1,580	1,759	94.6	84.9	26,947	28,022	30,863	84,210	87,570	96,446	96.2	87.3	96.2	87.3
*Scotland . . . . .	854	867	872	98.5	97.9	...	16,710	14,999	...	52,220	46,872	...	...	...	...
*N. Ireland . . . . .	288	286	305	100.8	94.5	...	6,464	6,014	...	20,201	18,792	...	...	...	...
Greece . . . . .	324	304	293	106.8	110.8	3,050	2,325	1,615	9,533	7,266	5,048	131.2	188.8	131.2	188.8
Hungary . . . . .	572	578	649	99.0	88.2	7,035	6,962	7,021	21,984	21,756	21,940	101.0	100.2	101.0	100.2
Italy 1) . . . . .	1,110	1,103	1,238	100.6	89.6	12,706	13,302	13,036	39,706	41,568	40,738	95.5	97.5	95.5	97.5
Lithuania . . . . .	758	802	736	94.5	103.0	6,920	7,121	5,941	21,626	22,252	18,565	97.2	116.5	97.2	116.5
Luxembourg . . . . .	848	922	820	92.0	103.5	7,957	7,857	7,830	24,865	24,553	24,469	101.3	101.6	101.3	101.6
Norway . . . . .	69	69	72	100.6	95.0	1,173	1,018	951	3,665	3,182	2,970	115.2	123.4	115.2	123.4
Netherlands . . . . .	242	235	240	103.3	100.9	3,950	4,265	3,879	12,342	13,328	12,121	92.6	101.8	92.6	101.8
Poland . . . . .	337	350	376	96.3	89.8	6,799	6,693	7,165	21,247	20,916	22,392	101.6	94.9	101.6	94.9
Portugal . . . . .	5,444	5,487	5,224	99.2	104.2	54,013	52,709	53,999	168,791	164,714	168,747	102.5	100.0	102.5	100.0
Rumania . . . . .	...	459	445	...	...	1,164	2,354	1,937	3,636	7,355	6,052	49.4	60.1	49.4	60.1
Russia . . . . .	2,016	1,956	2,655	103.1	75.9	20,724	14,169	22,199	64,761	44,276	69,372	146.3	93.4	146.3	93.4
Sweden . . . . .	1,541	1,579	1,681	97.6	91.7	20,624	26,191	24,617	64,451	81,845	76,927	78.7	83.8	78.7	83.8
Switzerland . . . . .	40	41	49	98.7	82.2	761	776	859	2,377	2,425	2,685	98.0	88.5	98.0	88.5
Czechoslovakia . . . . .	1,983	2,027	2,078	97.8	95.4	30,918	36,681	30,540	96,618	114,628	95,437	84.3	101.2	84.3	101.2
Total Europe . . . . .	§) 29,971	30,792	32,065	97.4	93.5	416,209	422,265	412,391	1,300,609	1,319,574	1,288,716	98.6	100.9	98.6	100.9
Canada . . . . .	13,576	13,138	12,997	103.3	104.5	107,768	133,311	130,976	336,776	416,034	409,297	80.9	82.3	80.9	82.3
United States . . . . .	37,023	41,193	39,590	89.9	93.5	223,530	396,234	379,047	698,531	1,184,522	86,494	59.0	59.0	59.0	59.0
Total North Amer. . . . .	50,599	54,331	52,587	93.1	96.2	331,298	529,365	510,023	1,035,307	1,654,265	1,593,819	62.6	65.0	62.6	65.0
Syria and Lebanon . . . . .	28	28	35	101.8	80.6	118	298	238	367	931	743	39.3	49.4	39.3	49.4
Turkey . . . . .	...	294	350	...	...	3,748	2,793	2,407	11,712	8,729	7,523	134.2	155.7	134.2	155.7
Algeria . . . . .	521	488	592	106.9	88.1	3,042	2,786	4,138	9,507	8,707	12,932	109.2	73.5	109.2	73.5
French Morocco . . . . .	74	56	83	131.1	88.6	668	405	673	2,086	1,267	2,105	164.7	99.1	164.7	99.1
Tunis . . . . .	74	54	104	136.4	71.0	551	617	789	1,722	1,929	2,466	89.3	69.8	89.3	69.8
Total Africa . . . . .	669	598	779	112.0	85.8	4,261	3,808	5,600	13,315	11,903	17,503	111.9	76.1	111.9	76.1
*Argentina . . . . .	§) 3,460	§) 3,652	§) 3,595	94.7	96.2	...	22,267	20,462	...	69,583	63,944	...	...	...	...
*Uruguay . . . . .	74	146	150	119.5	116.1	...	...	908	...	...	2,837	...	...	...	...
GRAND TOTALS . . . . .	§) 81,561	86,043	85,816	94.8	95.0	755,634	958,530	930,659	2,361,310	2,995,402	2,908,304	78.8	81.2	78.8	81.2

†) The two dates mentioned refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area are not yet available. — \* Countries not included in the totals. — w) Autumn crops. — x) Spring crops. — 1) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Including spelt and meslin. — 3) Unofficial data. — 4) European crops only. — 5) Area sown. — 6) Area sown to 1 May. — 7) Barley and meslin.

According to a private estimate the barley crop will be about 29.8 million centals (62.0 million bushels) that is millions larger than that of last year which was 28.2 (58.8).

*Great Britain and Northern Ireland :* In England and Wales, the warm dry weather of August was continued during the first three weeks of September over the whole country. In the latter part of the month, intermittent rains were general. The cereal harvest was practically completed during August under most favourable conditions. The quality of the wheat is excellent. A large proportion of the barley crop is of good malting quality though in many districts it is stated to be steely. The oat crop is of good quality though spring sown is somewhat light.

Cultivation for the autumn sowings generally has proceeded under very favourable conditions and was well forward at the end of September. The land is cleaner than usual. Very few catch crops have been grown.

Although ploughing on heavy land was held up owing to the hard state of the ground, considerable progress was made after the rains.

In Scotland in most parts of the country, the conditions during September were very satisfactory for farming operations and the conclusion of the grain harvest was carried out in very favourable weather, that part of the cereal crops which was not already in stook being secured in exceptionally good order. Temperatures were mostly high for the season but considerable rain fell on one or two days. Dunging of the fields was carried out expeditiously but the land was generally too hard and dry for ploughing. At the beginning of October, however, more autumn work had been accomplished than is usually done by the end of that month.

In Northern Ireland rainfall for September was exceptionally small. The weather was mostly mild and included many bright sunny days. Towards the end of the month, however, ground frosts were frequent, with occasional fog. Conditions were very favourable for farm work, which is much further advanced than is usual for the season. Threshing of wheat commenced in most districts during September and the yield of grain so far has been comparatively light. A considerable quantity of the oat crop was threshed during the month and while the yield of straw is fairly good, the grain generally is only moderately filled and the yield will be lighter than was expected. A start was made during the month in the threshing of the barley crop and it is expected that the yield will be fairly satisfactory but not so good as was the case last year.

*Hungary :* During the three weeks from September 16 to October 7, the weather was characterised by rather high temperatures and by precipitation below the average. At the end of the period considered, threshing of straw cereals had been finished everywhere. Quality of the grains is classified as follows : wheat, good and in many districts, very good ; rye : excellent with small grain only in places ; barley : generally satisfactory with well-formed grain ; oats : generally average.

Towards October 7, the winter wheat sowings were in progress, whereas those of rye and winter barley had been finished ; the barley and rye sowings have germinated uniformly.

*Italy :* Preparations for sowing of winter cereals, favoured by better conditions of soil moisture, were carried out actively in September. Weather in the latter half of the month was very rainy in North and Central Italy ; light rains fell in the South and the Islands.

*Latvia* : During the first three weeks of September, the temperature was in general a little below the normal and precipitation was very abundant. During the last ten days, the temperature considerably exceeded the average, whereas the precipitation was minimum.

*Lithuania* : The rainy weather of the first fortnight of September has interfered with the bringing in of the spring crops. Sowings of winter barley were somewhat hindered by the rains but were begun in the first fortnight of September. They were completed towards the end of the month and wheat sowings were then started.

*Norway* : Production of meslin in 1933 is estimated at 229,000 centals against 261,000 in 1932 and 246,000 on the average of the five years 1927-31; 87.8 % and 93.0 %.

*Rumania* : The first half of October was characterized by fine warm weather save in the last few days, when some rain was recorded in all departments. Subsequently weather hindered preparations for sowing winter cereals. Up to the middle of October wheat had been sown only on very a small area due to the dryness and hardness of the soil or the delay in the maize harvest, sowings of winter wheat in Rumania being made preferably after maize.

*Yugoslavia* : The weather during the first half of September was variable, rainy and cold; during the latter half of the month, sunny days were more frequent and the weather turned warmer. Although the cereal harvest has been everywhere finished, the official estimate of production of cereals this year has not yet been published.

*U. S. S. R.* : On 10 October cereals harvested on 187,442,000 acres, 91.5 % of the total area harvested, had been taken to the mills or barns; the remainder was still not brought in. At the same date the cereals harvested had been threshed on an area of 141,655,000 acres.

In many parts of the country rains had damaged cereals remaining in the fields.

The area sown to winter cereals on 10 October had reached 74,956,000 acres, 79.8 % of the plan. Of the total area devoted to winter crops in 1933-34, fixed by the Government at 93,926,000 acres, 31,100,000 were to be sown to winter wheat.

Deliveries of grain to the Government since the beginning of the season, that is, from 1 July to 20 September had already approached the total for the whole of the preceding season and at the beginning of October represented 70 % of the figure fixed for the current year.

*Argentina* (Telegram of 18 October) : In the cereal regions, including the provinces of Buenos-Ayres, Santa Fé, Entre-Rios, Córdoba and the National Territory of the Pampas, crop condition of wheat is good and only slight damage has been reported. The second estimate of area sown to this cereal, shows an increase of 618,000 acres on the preceding estimate formed last August; the new estimate, however, remains 4.5 % and 7.8 % below the final estimate of last year and the average of the preceding five years. For barley and rye the increases are respectively 49,400 acres and 74,100 acres on the estimates made last August whereas for oats the first estimate, indicating a reduction of 5.3 % on last year and of 3.8 % on the average of the preceding quinquennium, is confirmed. The situation of these cereals varies from average to good and grave damage has been caused by livestock turned out to graze in the fields.

*United States* : In the week ended on September 27 showers were beneficial in conditioning soil in the Ohio Valley, except in western localities, especially in Illinois



where many sections remained too dry for ploughing and sowing. Seeding of winter wheat made excellent progress in eastern and northern Kansas and was approximately half completed. In the other areas conditions were mostly good. Frequent rains were favorable in the Pacific Northwest. In the following week to October 4 seeding conditions were more favourable except in some Pacific and Southern areas where the weather was too dry. By October 11, winter wheat seeding had advanced well but rain was needed in Ohio, Texas and Southwest Kansas. Dry weather retarded sowing in parts of the Pacific Northwest.

By 25 October the winter wheat sowings had been almost finished; rain was wanted.

*Mexico* : Work of preparing the soil for cereal sowings has been favoured by the course of the season. August weather was generally warm and rainy except in the western districts of the northern zone and northern areas on the North Pacific.

*Uruguay* : According to an official report of September, the work of preparing the soil and cereal sowings were effected under particularly favourable conditions. Towards the end of August, the sowings had been finished and crop condition was excellent. The area sown this year to cereals is larger than that of last year.

*Algeria* : In the second fortnight of September and the first week of October, there were showers, sometimes amounting to rain storms, but these were insufficient to give the soil the degree of humidity required in consequence of the prolonged summer drought. The plain lands of Oran were the chief sufferers. Moreover the work of preparing the soil was carried out under poor conditions generally, and by the end of the first week of October sowing had only just been begun in a few places.

*Tunisia* : Work preparatory to winter sowings has been carried out in fairly satisfactory conditions.

*Union of South Africa* : Winter grain crops in the Western Cape Province showed considerable improvement with the advent of milder weather and have not been so promising for many years. Over the remainder of the Union production will be low.

*Australia* (Telegram of 16 October): In New South Wales crop condition is much improved consequent on the general rainfall but this year's production is expected to be much less than that of last year. In Victoria and South Australia there has been general rainfall and appearance of the crop is favourable. The crop in Western Australia during the latter part of September suffered from drought but after the rains of early October had a more favourable appearance.

## MAIZE

The estimates of the maize crop in the various countries of the northern hemisphere steadily become more numerous and more exact. The total volume of production in this hemisphere begins, therefore, to be more precisely measurable.

The official estimate of the United States crop, the largest not only in the northern hemisphere but in the world, has now remained for a month at about 1,280 million centals (2,290 million bushels), nearly 80 % of last year's crop and 90 % of the five-year average for 1927-31. The same cannot, however, be said

about the second most important producing region of the northern hemisphere, the Danubian lands: Rumania, Yugoslavia, Hungary, Bulgaria. The results of the crop in these countries, especially in Rumania and Yugoslavia, remained uncertain until the end of September. Owing to the great delay in sowings and consequent on the cold weather, and the slow development of the crop during the first phase of growth, ripening was seriously threatened, especially in highlyling

### Maize.

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100							1932 = 100	Average = 100
1,000 acres					1,000 centals			1,000 bushels of 56 lbs					
Austria . .	163	148	145	109.8	112.5	3,153	2,690	2,639	5,630	4,803	4,712	117.2	119.5
Bulgaria . .	1,762	1,829	1,726	96.3	102.1	22,996	23,246	16,098	41,064	41,511	28,747	98.9	142.8
Spain . . .	1,059	1,102	1,053	96.0	100.5	12,362	15,280	14,245	22,076	27,286	25,438	80.9	86.8
*France . .	813	814	848	99.9	95.9	...	9,025	11,031	...	16,116	19,699	...	...
Greece . . .	1) 687	654	521	105.0	131.7	1) 4,206	4,707	3,386	1) 7,511	8,406	6,046	89.4	124.2
Hungary . .	2,862	2,905	2,670	98.5	107.2	40,250	53,617	34,016	71,875	95,746	60,743	75.1	118.3
Italy 2) {s}	3,122	3,259	3,446	95.8	90.6	52,001	61,906	47,773	92,858	110,546	85,309	84.0	108.8
Italy 2) {s}	342	322	230	106.1	148.4	...	4,569	2,199	...	8,159	3,926	...	...
Rumania . .	12,059	11,803	11,195	102.2	107.7	103,618	132,123	102,555	185,032	235,934	183,134	78.4	101.0
Switzerland .	2	3	3	98.7	86.7	60	62	75	106	110	135	96.4	78.9
Czechoslov..	331	338	349	99.3	94.6	4,727	6,819	5,248	8,440	12,176	9,371	69.3	90.1
Yugoslavia .	6,468	6,488	5,893	99.7	109.8	80,593	105,667	65,007	143,916	188,692	116,083	76.3	124.0
—													
*Canada . .	134	130	143	103.1	93.6	...	2,832	2,908	...	5,057	5,192	...	...
United Stat.	103,022	107,776	100,519	95.6	102.5	1,283,183	1,610,319	1,406,123	2,291,398	2,875,570	2,510,933	79.7	91.3
—													
*Syria & Leb.	66	61	96	109.3	69.0	...	759	1,091	...	1,355	1,948	...	...
—													
Algeria . . .	20	20	24	98.0	83.7	110	122	146	197	217	260	90.5	75.6
Egypt . . .	2,943	2,043	2,071	...	...	43,598	42,591	42,314	77,854	76,055	75,561	102.4	103.0
Eritrea . . .	10	7	18	133.3	56.3	88	66	138	157	118	247	133.3	63.7
*Kenya 3) .	142	164	195	86.5	72.5	...	2,279	2,584	...	4,070	4,614	...	...
Tunis 4) . .	37	44	41	83.3	89.7	132	121	117	236	217	209	109.1	113.2
\$)													
TOTALS . . .	133,647	138,419	129,674	96.6	108.1	1,151,077	2,059,336	1,739,880	2,918,350	3,677,387	3,106,923	80.2	94.9

§) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area not yet available. — \* Countries not included in the totals. — 1) Spring crop (maggengo). — 2) Summer crop (cinquantino). — 3) Calculated, unofficial figure. — 4) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 3) European crop. — 4) Maize and sorghum.

areas. In Rumania at the beginning of October it was officially reckoned that on 70 % of the sown area the crop would certainly reach complete maturity with a yield varying from 10 centals (18 bushels) per acre in northern Bessarabia and the Danube valley to 12 (22) in the Tisa valley. On the remaining 30 % of the sown area only a small part can ripen. Due to these special circumstances in both Rumania and Yugoslavia, it is expected that the new crop will have a high moisture content.

The total production of these four countries (on the basis of the second estimates for Rumania and Bulgaria, the first estimate for Yugoslavia and the fourth

estimate for Hungary) amounts to 247.5 million centals (441.9 million bushels) against 314.7 (561.9) million in 1932 and 217.7 (388.7) million on the five-year average for 1927-31, the percentages with reference to the latter figures being 78.6 and 113.7.

While the outcome of the crop in the United States is not such as to permit even a small export, the four Danubian countries may have on 1 November a total of about 55 million centals (98 million bushels) available for export, including old crop stocks.

Of the nine European countries that both produce and import maize, estimates are so far lacking for France, Portugal and Poland. The total production of the other six – Italy, (not including the *cinquantino* crop) Spain, Czechoslovakia, Greece, Austria and Switzerland – amounts to 77 million centals (137 million bushels) against 91 (163) million in 1932 and 73 (131) million on the average for 1927-31, the percentages with reference to these figures being 83.6 and 104.3. Consumption of maize in this group of six countries may be calculated at about 110 million centals (197 million bushels) on the average so that there should be a theoretical possibility of foreign markets absorbing a further 33 (59) million approximately. Taking into account, however, the abundance of the production of straw cereals in these countries and the tendency of of the Governments to utilize as far as possible home-produced fodder, the possibility is not be excluded that even this relatively modest figure will not be attained. The volume of imports of these six countries underwent a very great contraction in the Danubian season just ending (1 November 1932-31 October 1933). In fact, while in the Danubian seasons 1931-32 and 1930-31 respectively these countries imported 47.4 (84.6) million and 44.5 (79.5) million centals (bushels), in the first ten months of the current season, from 1 November 1932 to 31 August 1933, they imported only 19.0 (33.9) million centals (bushels). This great diminution is in large part to be explained by the abundance of the maize crop in Italy, but the other countries, with the exception of Austria, have also reduced their imports.

As regards the other three European countries – France, Portugal and Poland – production this year appears to be below the average, which in the five years 1927-31 amounted to approximately 22 million centals (39 million bushels). Reckoning the consumption of maize in these three countries at 40 (71) million, it may be expected theoretically that imports will amount to at least 18 (31) millions.

Summing up, the nine European countries that both produce and import may be expected to import about 51 million centals (91 million bushels) in all during the Danubian season 1933-34.

It is much more difficult if not quite impossible to forecast even approximately the quantity that will be absorbed by the eight large importing, non-producing European countries: the United Kingdom, the Netherlands, Germany, Belgium-Luxemburg, Denmark, the Irish Free State, Norway, Sweden.

As an indication of the potential import of maize by these eight countries may be taken the fact that in the first ten months of the current Danubian season from 1 November 1932 to 31 August 1933, they imported 122.4 (218.5)

million centals (bushels) against 155.0 (276.8) and 116.8 (208.7) million in the corresponding periods of 1931-32 and 1930-31 respectively. In the entire Danubian season 1931-32 they imported 181.7 (324.4) million centals (bushels) and in 1930-31 149.7 (267.3) million.

In any case the residual stocks of the 1932-33 crop in Argentina, together with the stocks available in the four Danubian countries, will suffice to cover world requirements till the appearance on the market of the new Argentine crop.

V. De.

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*Austria* : At the end of September the ripening of maize was still very backward. Only the early varieties had begun to ripen in the warmer regions.

*France* : The crop is reported to be very small especially in the southwest and east, where it has suffered particularly from drought.

*Hungary* : At the end of the first week of October, harvesting of early maize was in progress. The warm weather in the latter half of September favoured ripening but in several districts much unripened grain was reported. Maturity of late varieties is proceeding slowly.

*Italy* : During September harvesting continued ; good quality is confirmed.

*Rumania* : The warm dry weather of the first half of October favoured the crop, which was very late and of which the ripening depended on a long warm autumn. The hoarfrost of 4-5 October was injurious in the hill districts, where in any case only a small proportion of the crop ripens. In mid-October harvesting had begun in the Danube and Tisa valleys.

*Yugoslavia* : Despite the favourable weather conditions which predominated in the summer-autumn, cold weather and floods and excessive moisture caused by rains in the latter half of September checked the ripening of maize (especially the late crop and considerably deteriorated crop condition.

According to the first official estimate, maize production this year is forecast to be about 25 million centals (45 million bushels) below that of last year. This large decrease in production is due particularly to the considerable reduction in yield per acre, which this year is 12.4 centals (7.4 bushels) per acre against 17.0 (10.2) obtained in 1932, the area harvested having remained nearly equal to that of last year.

Production this year exceeds the productions obtained during the last seven years, with the exception of the years of exceptional production, 1929 (91.4 million centals ; 163.3 million bushels) and 1932 (105.7 million centals ; 189 million bushels).

*Argentina* : (Telegram of 18 October) : Sowings are making good progress in Buenos-Ayres province and in the Pampas territory. Crop condition is generally good.

*United States* : On October 4 cutting of maize had made good progress but part of the crop in the middle Atlantic States had been abandoned owing to storm damage.

*Palestine* : Production of maize is very poor.

*Egypt* : At the beginning of September sowing of late crops had been finished. In the early fields of Lower and Middle Egypt the cobs and grain are forming. In Upper Egypt the crop is still flowering. Crop condition : 101 on October 1 against 100 on September 1 and 100 on October 1, 1932.

*Union of South Africa* : Drought continued until the end of August when welcome showers fell in many inland areas. It is doubtful, however, whether the rainfall was sufficient to afford much relief and the plight of agriculture in the Transvaal and Orange Free State sections remained, as in most other areas, serious. Even in Natal farmers were concerned as to the future. Throughout the summer-rain area very little land had been prepared for the coming season owing to the drought and the poor condition of the oxen.

## RICE

*Italy* : Harvesting continued in September. In Novara production appears abundant, as also in Vercelli, where quality is also very good. In Pavia unit yield was expected to be average.

*British Malaya* : In August the weather on the western side of the Peninsula was on the whole normal, though in Malacca, especially in the coastal area, there was drought. In Pahang and Kelantan conditions were unusually dry in the first two decades of the month.

Good progress was made with preparation of the land, sowing and planting throughout Kedah, Province Wellesley and Perak. In part of Negri Sembilan planting was slow while in the coastal *mukims* of Malacca it was delayed by drought. In Kelantan the planting of dry padi was completed by the end of the month but dry weather hindered the preparation of the land for wet padi and the nurseries were suffering from lack of rain. In the coastal districts of Selangor planting operations were commenced. The planted crop in the inland districts of Selangor, the major part of Negri Sembilan and in Pahang continued to make good progress though in parts of the latter State the water supply was somewhat deficient.

Padi pests were not particularly in evidence.

*Formosa* : Crop condition on 1 September was average. Insects have caused little or no damage but the lack of rain has been unfavourable.

*India* : The area sown to rice in Burma is reported to have increased by 18,800 acres.

The monsoon withdrew in the last week of September. Winter padi in Bengal was in fair condition and on the whole promising at the end of the first decade of October. With the withdrawal of the monsoon, rainfall, which had been moderate to heavy in the last week of September, had diminished to light and scattered.

Rainfall in Bihar and Orissa had at the same date been moderate and more moisture was needed in Champaran and Mujaffargar. The rivers in Cuttack were, however, again in flood and *saradh* padi was submerged.

In Madras sowing and transplanting were taking place in the latter part of September and first part of October. There was heavy rain on the West Coast and moderate rain elsewhere. Standing crops were in fair condition save in the flooded areas of eastern Godavari.

In the Central Provinces heavy rains in the last decade of September, holding up operations, gave place in the first decade of October to clear, warm weather with

light showers, which maintained the condition of standing crops. Early rice was progressing favourably.

Rains had been satisfactory in the United Provinces and standing crops were doing well at the end of the first week of October.

### Rice.

COUNTRIES	AREA						PRODUCTION OF ROUGH RICE							
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		1933/34	1932/33	Average 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		
				1932/	Average 1933							1932/	Average 1933	
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100		
Bulgaria . .	14	13	18	107.4	77.8	297	304	349	661	675	776	98.0	85.1	
Spain . . .	116	123	119	94.8	98.0	6,531	7,016	6,546	14,514	15,591	14,546	93.1	99.8	
Italy 1) . .	313	335	346	93.6	90.5	13,252	14,477	14,611	29,449	32,169	32,468	91.5	90.7	
United Stat.	767	869	952	88.3	80.6	16,236	17,710	19,776	36,081	39,356	43,947	91.7	82.1	
Korea . . .	4,160	3,824	3,965	108.8	104.9	72,779	64,297	63,443	161,727	142,879	140,981	113.2	114.7	
Formosa 2) .	707	700	640	101.0	110.5	15,296	16,731	13,090	33,991	37,180	29,089	91.4	116.9	
India 3) . .	74,994	75,132	74,586	99.8	100.5	—	—	—	—	—	—	—	—	
Indo-China:														
Annam { 4)	946	981	1,042	96.5	90.8	8,598	7,716	7,953	19,106	17,147	17,673	111.4	108.1	
Formosa { 5)	1,421	1,176	1,450	120.8	98.0	—	10,737	11,618	—	23,859	25,817	—	—	
Tonkin 6) . .	—	1,181	1,303	—	—	13,955	13,073	15,687	31,011	29,052	34,860	106.7	89.0	
Japan . . .	7,867	7,983	7,874	98.5	99.9	261,836	240,764	242,437	581,847	535,020	538,737	108.8	108.0	
Siam 7) . . .	2,920	2,474	—	118.0	—	—	—	—	—	—	—	—	—	
Syria & Leb	—	1	8)	151.9	224.0	—	7	7	—	16	15	—	—	
Egypt . . .	—	489	291	—	—	12,905	12,135	7,984	28,677	26,996	17,743	106.3	161.6	

1) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey.  
 — 2) First crop. — 3) First half-year. — 4) First forecast. — 5) Second half-year. — 6) Rice of the fifth month. — 7) Area planted in 35 Provinces of the Inner Circles as at the end of July. — 8) Area inferior to 500 acres.

In Bombay standing crops were reported on 14 October to be doing well. Rain-fall had been light and scattered in Gujarat and the Deccan, fair in the Konkan and heavy in the Karnatak, where the need of rain had been reported a week previously.

In Assam prospects were reported fair on 16 October, though floods had caused damage in Cachar.

*Japan*: Weather in October was favourable.

*Siam*: The final estimates for 1932-33 indicate a sown area of 7,942,000 acres against 7,638,000 in 1931-32, an increase of 4.0 %, and an average of 7,358,000 in the five years ending 1930-31, an increase of 7.9 %. The area harvested was 7,441,000 acres against 6,378,000, an increase of 16.7 % and the average of 6,464,000, an increase of 15.1 %. Production was 11,370 million pounds rough rice against 9,041 million in 1931-32, an increase of 25.8 %, and 9,944 million on the average of the five years ending 1930-31, an increase of 14.3 %.

At the beginning of August 1933 crop condition in the Inner Circles was good for 39 provinces and fairly good for six provinces.

*French West Africa*: In Guinea the area under rice appears to have been extended. Guinea is one of the principal producers of the group and last year had an area of about 500,000 acres.

*Egypt*: Weather in September was favourable. Early *sefi* was ripening and in places harvesting had even begun; crop condition on 1 October was 103 against 101 on 1 September and 100 on 1 October 1932. In the first week of September sowing of late *nili* was ended; crop condition on 1 October was 100 as on 1 September and 1 October 1932.

## POTATOES

Weather conditions during the preceding month, owing principally to the drought which predominated in nearly the whole of the country during July and at the beginning of August, were not favourable to the potato crop. At

### Potatoes.

COUNTRIES	AREA					PRODUCTION							
	1933*	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Average							1932	Average
			= 100	= 100	= 100			= 100					
1,000 acres	1,000 cents	1,000 bushels of 60 lbs											
Germany (e)	606	624	593	97.1	102.2	66,489	61,789	62,078	110,814	102,980	103,462	107.6	107.1
(m)	6,532	6,490	6,388	100.7	102.3	895,291	966,668	863,260	1,492,123	1,611,082	1,438,738	92.6	103.7
Austria . .	508	511	467	99.5	108.8	61,747	50,235	58,765	102,910	83,723	97,940	122.9	105.1
Belgium . .	404	435	415	92.7	97.2	9,226	97,864	76,679	132,041	163,103	127,797	81.0	103.3
Bulgaria . .	37	37	29	100.0	128.9	1,698	2,134	1,000	2,829	3,556	1,667	79.6	169.7
Spain . . .	976	1,033	889	94.5	109.8	91,411	110,799	92,242	152,348	184,662	153,734	82.5	99.1
Estonia . .	169	166	165	102.1	102.5	15,794	17,258	16,374	26,323	28,762	27,289	91.5	96.5
*Irish F. State	352	348	357	101.3	98.7	...	67,545	53,607	...	112,576	89,343	...	...
Finland . .	200	190	176	105.2	113.6	27,311	21,680	17,978	45,517	36,133	29,963	126.0	151.9
*France . .	3,419	3,492	3,573	97.9	95.7	...	363,410	331,525	...	605,671	552,531	...	...
Engl. a. W..	518	504	479	102.8	108.3	71,949	74,099	68,777	119,915	123,499	114,626	97.1	104.6
*Scotland . .	153	149	137	103.0	111.3	...	25,581	20,366	...	42,635	33,943	...	...
*N. Ireland .	139	142	146	98.0	95.1	...	25,218	21,906	...	42,031	36,509	...	...
Greece . . .	46	38	27	121.4	171.6	1,865	962	1,499	3,109	1,604	48.2	93.4	...
Hungary . .	735	738	674	99.6	109.0	45,579	34,336	39,386	75,963	57,226	65,642	132.7	115.7
*Italy 2) . .	987	1,022	871	96.6	113.3	...	62,251	41,277	...	103,750	68,793	...	...
Latvia . . .	257	253	216	101.7	118.9	25,648	26,569	19,323	42,746	44,280	32,204	96.5	132.7
*Lithuania .	441	428	356	103.0	123.7	...	42,302	34,534	...	70,503	57,556	...	...
Luxemburg .	41	41	40	99.8	100.3	3,869	4,854	4,078	6,448	8,091	6,796	79.7	94.9
Malta . . .	7	7	7	95.6	97.9	451	564	645	752	941	1,075	80.0	70.0
Norway . . .	120	123	119	97.3	100.7	20,564	22,818	17,620	34,273	38,029	29,366	90.1	116.7
Netherlands	379	435	425	87.1	89.3	64,651	81,130	72,255	107,749	135,215	120,423	79.7	89.5
Poland . . .	6,792	6,709	6,410	101.2	106.0	621,706	660,827	652,888	1,036,155	1,101,357	1,088,125	94.1	95.2
*Rumania . .	484	471	491	102.8	98.7	...	35,488	43,773	...	59,145	72,954	...	...
Sweden . . .	327	338	340	96.7	96.0	37,898	47,039	34,432	63,161	78,397	57,386	80.6	110.1
Switzerland .	117	115	116	101.9	101.1	16,700	14,438	15,368	27,833	24,063	25,613	115.7	108.7
Czechoslovakia (e)	96	94	79	102.0	121.1	6,832	7,533	6,612	11,387	12,555	11,020	90.7	103.3
slov. (m)	1,735	1,718	1,695	101.0	102.4	169,586	196,975	206,441	282,637	328,286	344,062	86.1	82.1
Canada . . .	521	521	574	99.9	90.8	40,260	39,416	47,426	67,100	65,693	79,041	102.1	84.9
United States	3,223	3,371	3,208	95.6	100.5	184,429	214,607	220,269	307,382	357,679	367,116	85.9	83.7
*Syria a. Leb.	17	18	17	95.0	99.3	...	790	1,091	...	1,317	1,819	...	...
Algeria (m)	31	25	26	125.1	120.1	1,102	1,015	937	1,837	1,691	1,561	108.6	117.7
TOTALS . .	24,378	24,516	23,550	99.4	103.5	2,551,090	2,764,593	2,595,796	4,251,740	4,607,579	4,326,250	92.3	98.3

\* Countries not included in the totals. — e) Winter, so-called early, potatoes. — m) Main season crop. — i) Unofficial estimate (calculated). — 2) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey.

present the figures of production are known for several large European potato producing countries. Germany, which takes first place among these countries, reports a good total crop which, while remaining 7.2 % below the very abundant crop of last year, exceeds the five year average by 3.9 %. It should be noted that early potatoes have yielded a production exceeding that of last year and the average by about 7 %. In Poland, the yields obtained were about 5 % smaller than both that of last year and the average. For Czechoslovakia, production this year remains 3.7 % below that of 1932 and 7.2 % below the average.

Among the large European producing countries, France has not yet communicated a production estimate. According to information at present available, the situation varies greatly. The prolonged drought has caused considerable damage and it is forecast that production will be below the five year average and considerably below the figure for 1932, which was a year of very heavy production.

North America, which contributes only about 8 % of world production, also reports a deficient crop.

Owing to the fact that the statistical data for France, which occupies third place among the large potato producing countries, are still lacking, it is still impossible to establish a figure of world production. On the basis of the information available on the general situation and in the absence of unforeseen circumstances in connection with the French production, it is probable that world production in 1933 will not reach the high level of the abundant production of 1932 and that it may remain below the average of the preceding five years.

V. B.

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*Germany* : Lifting of potatoes was in full swing towards the end of September and had already been finished in some regions.

*Austria* : At the beginning of October, harvesting of early potatoes was everywhere in progress. The tubers have no disease. Lifting of the main crop had also begun ; the tubers of this crop are not generally of normal size.

*Irish Free State* : Potato yields are likely to be about three fourths of last year's total, which will represent a fair average crop. The effect of the dry season has merely been to check what would otherwise have been very high yields.

*France* : Weather favoured lifting. The crop varies greatly according to region, being good and even very good in the north and in Brittany, where it is, according to some estimates, one-third larger than that last year, mediocre and much below the average in the centre and very bad in the east, where the effects of the drought were added to those of the bad weather in spring ; which hindered preparatory work, while in some parts of the Loire valley cockchafer larvae destroyed the tubers.

On the whole, production this year appears to be below the average and very distinctly below that of last year. The official preliminary estimate for last year is considered to have been too low since it indicated a crop just above the average though yields were rather high.



*Great Britain and Northern Ireland* : In England and Wales, the warm dry weather of August was continued during the first three weeks of September over the whole country. In the latter part of the month intermittent rains were general. Lifting of the main potato crop was in general progress and in some districts was practically completed at the end of September. Conditions for lifting and clamping have been very favourable. Crops are generally reported to be of good quality and free from disease, but owing to drought and premature ripening, tubers are on the small side.

In Scotland many of the reports on potatoes are rather disappointing and of those that are satisfactory most come from districts where the crop is of comparatively little importance. Blight made its appearance in many fields but the dry conditions generally stopped its development and most varieties were fairly free from disease. The rain that fell towards the end of the month came too late to benefit the tubers to any considerable extent and reports indicate that a larger proportion than usual are of seed size. Most of the earlies had been lifted before the end of September and the harvest of late varieties, which began earlier than usual, was then in full swing. The crop was harvested in very good order and most of the tubers were pitted in excellent condition. The prospects of the yield deteriorated during the month.

In Northern Ireland, September weather was marked by exceptionally low rainfall and mild temperatures with some ground frosts towards the end month. The quality of the 1933 potato crop should be quite good but it is expected that the yield will be considerably lower than last year. Blight has, so far, caused little damage and a very large percentage of the crop is sound. Seed size potatoes are in much larger supply than was the case in 1932.

*Hungary* : Towards October 7 lifting of potatoes was in progress. In many districts the tubers are small and here and there cases of disease are reported.

*Lithuania* : The September rains were unfavourable to the potato crops, in which, in the low lying regions, rot began to set in.

*Canada* : Yield per acre and total production of potatoes in 1933 were slightly above the low figures of 1932. Despite the summer drought, crops were benefited by timely rains in August and September.

*Haiti* : In August the lifting of late potatoes was in progress in the Southern department.

## SUGAR

The drought which, up to the beginning of September caused some damage to sugar beet crops, continued, though less severely, during the whole of the month and in some countries up to the beginning of October. Although the weather conditions were not, in general, very favourable to growth, the sugar beet situation improved at the beginning of October compared with the beginning of September.

In France, lifting was effected in satisfactory conditions during the fine days at the beginning of October, with the exception of crops on heavy lands on which the action of rain at the end of September was less notable. In Poland, where the crops suffered greatly from drought during the first stages of growth, a considerable improvement occurred at the end of September, after partial

rainfall during the month and lifting had already begun everywhere with the exception of the northern and western districts. In England, and Ireland also, where the crop situation began to give rise to some apprehensions towards mid-September owing to lack of rain, growth benefited somewhat from the wet weather which followed; yields per acre, however, will probably be below the aver-

*1933-34 Campaign — Analysis of Sugar Beets.*

COUNTRIES	Average weight of root			Average weight of leaves			Sugar content			Weight of sugar per root		
	1933	1932	1927 1931	1933	1932	1927 1931	1933	1932	1927 1931	1933	1932	1927 1931
	oz.	oz.	oz.	oz.	oz.	oz.	%	%	%	oz.	oz.	oz.

4th WEEK OF JULY.

Netherlands 1) . .	11.4	—	—	—	—	—	12.0	—	—	1.4	—	—
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2nd WEEK OF AUGUST.

Netherlands 1) . .	17.0	—	2) 16.8	—	—	—	13.9	—	2) 14.8	2.4	—	2) 2.5
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4th WEEK OF SEPTEMBER.

Germany . . . . .	17.0	20.1	18.1	14.4	15.2	17.3	18.4	17.0	17.4	3.0	3.4	3.1
Belgium . . . . .	20.9	24.0	3) 22.5	22.5	27.2	3) 28.6	16.0	15.1	3) 15.6	3.4	3.6	3) 3.5
Denmark . . . . .	18.7	—	4) 16.2	13.8	—	4) 15.1	17.0	—	4) 17.1	3.2	—	4) 2.8
Finland . . . . .	19.3	21.6	17.1	25.2	27.7	24.2	15.6	15.4	15.0	3.1	3.3	2.6
France . . . . .	17.7	19.2	5) 18.7	14.8	19.0	5) 19.4	16.6	17.3	5) 16.9	2.9	3.3	3.1
Czechoslovakia . .	14.6	19.0	17.5	9.2	10.9	11.9	19.5	18.5	18.0	2.8	3.5	3.2

LAST WEEK OF SEPTEMBER.

Finland . . . . .	19.6	22.8	18.3	22.3	26.6	24.0	15.7	15.8	15.1	3.1	3.6	2.8
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1) Erratum: In the Crop Report for August the figures for the Netherlands were erroneously attributed to Denmark. —  
2) Year 1928. — 3) Average 1927 and 1930. — 4) Average 1927 to 1930. — 5) Average 1927, 1928, 1930 and 1931.

age. The sugar beet situation also improved at the beginning of October in Sweden, Denmark and Belgium. Crop condition of beet at the beginning of October was also good in Bulgaria, Rumania and Yugoslavia. In Germany and in Czechoslovakia, the sugar beet situation, while remaining satisfactory, has slightly deteriorated by adverse weather.

In some regions, such as Mecklenburg and Thuringia, owing to the drought which hardened the soil, which has not everywhere been softened by the recent rains, lifting was effected with difficulty and frequent losses; in other regions the drought checked the growth of the bulbs. In Pomerania, on the contrary, where the drought adversities, indicated above of the beginning of October, began to be felt, the work of lifting was considerably facilitated by the rains and was

effected rapidly. In Hanover and in the Rhineland areas, lifting was effected regularly, although little rain fell; the same situation prevailed in other regions of Germany.

*Sugar-beet.*

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Average 1931							1932	Average 1931
			1,000 acres					1,000 centals			1,000 short tons		
Germany .	751	669	1,091	112.3	68.9	170,809	173,628	259,767	8,540	8,681	12,988	98.4	65.8
Belgium . .	131	132	149	99.1	88.1	35,058	38,274	38,414	1,753	1,914	1,921	91.6	91.3
Bulgaria .	27	28	45	97.3	60.2	4,098	3,882	5,893	205	194	295	105.6	69.5
Denmark. .	106	94	91	113.1	117.0	...	31,581	22,649	...	1,579	1,132	...	...
Spain . . .	193	209	185	92.1	104.1	49,604	44,859	42,920	2,480	2,243	2,146	110.6	115.6
Finland . .	7	6	5	116.0	128.6	1,102	1,110	847	55	56	42	99.3	130.1
France . . .	649	658	644	98.6	100.7	...	167,340	151,187	...	8,367	7,559	...	...
Engl. & W.	364	255	242	142.7	150.5	...	49,874	42,613	...	2,494	2,131	...	...
Scotland . .	2	1	3	270.6	56.1	...	114	374	...	6	19	...	...
Hungary . .	108	105	167	103.5	64.6	19,482	18,717	30,545	974	936	1,527	104.1	63.8
Italy 1) . .	211	207	268	101.6	78.7	...	54,991	58,744	...	2,750	2,937	...	...
Eatvia . . .	21	20	—	104.2	—	3,953	—	—	198	—	—	...	...
Netherlands	117	99	141	117.8	82.9	37,578	34,613	41,192	1,879	1,731	2,060	108.6	91.2
Poland . . .	256	287	499	89.2	51.3	...	52,439	92,469	...	2,622	4,623	...	...
Rumania . .	105	45	127	231.8	83.0	...	6,679	19,229	...	334	961	...	...
Sweden . . .	124	101	91	122.7	136.4	35,825	34,261	21,814	1,791	1,713	1,091	104.6	164.2
Switzerland.	4	3	3	114.3	116.6	1,213	1,142	955	61	57	48	106.1	126.9
Czechoslov.	358	361	594	99.4	60.3	...	87,335	141,345	...	4,367	7,067	...	...
U.S.S.R. .	3,240	2) 3,123	2,282	103.7	142.0	—	—	—	—	—	—	—	—
Canada . . .	42	45	48	93.3	87.0	8,160	9,000	8,452	408	450	423	90.7	96.5
United St. .	969	764	708	126.8	136.8	217,180	181,400	157,084	10,859	9,070	7,854	119.7	138.3

1) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey.

— 2) Area harvested; area sown in 1932 was 4,038,000 acres.

In Czechoslovakia the weather in September was warm, particularly towards the end of the month. The drought was rather severe and abundant rains fell only in eastern Bohemia. In other eastern areas of the Republic also some light scattered rains fell.

Besides the drought, mice have caused some damage.

In Austria, the growth of the bulbs was backward and fairly considerable damage was reported as in Czechoslovakia, by mice.

In Hungary also, growth was in delay.

As regards the U. S. S. R., the weather was not unfavourable, but it seems that some difficulty will be encountered in lifting the beet and delivering them to the factories owing to lack of labour.

In this Report are given the first estimates of beet sugar production in the season just begun, 1933-34. The estimates have largely been transmitted directly by the Governments or by the Associations of Beet Sugar Manufacturers; the others have been calculated on the basis of data of area, crop conditions and

sugar content, or have been obtained from the « Association Internationale Sucrière » of Vienna, the latter appearing in a separate table. Although the conditions of growth this year have not been very favourable, an increase in production of beet and consequently of sugar is forecast which is, however, relatively less than the increase in the area sown.

*Production of Beet Sugar (raw).*

COUNTRIES	TOTAL PRODUCTION DURING THE SEASON						% 1933-34	
	1933-34 <sup>1)</sup>	1932-33	Average 1927-28 to 1931-32	1933-34 <sup>1)</sup>	1932-33	Average 1927-28 to 1931-32	1932-33	Average
	Thousand centals			Short tons			= 100	= 100
Germany . . . . .	28,722	23,996	42,619	1,436,101	1,199,793	2,130,906	120	67
Austria . . . . .	4,079	3,635	2,873	204,000	181,800	143,633	112	142
Belgium . . . . .	4,993	5,677	5,604	249,700	283,850	280,176	88	89
Bulgaria . . . . .	606	590	810	30,300	29,510	40,494	103	75
Denmark . . . . .	4,982	3,995	3,156	249,000	199,700	157,805	125	158
Spain . . . . .	5,732	5,136	5,945	290,000	256,805	297,245	112	96
Irish Free State . .	573	574	408	29,000	28,692	20,383	100	141
Finland . . . . .	121	140	79	6,100	6,996	3,927	87	154
France . . . . .	20,062	22,531	20,809	1,000,000	1,127,000	1,040,428	89	96
Great Britain . . .	9,612	7,399	6,104	481,000	369,957	305,200	130	157
Hungary . . . . .	2,425	2,279	4,467	120,000	113,955	223,330	106	54
Italy . . . . .	6,371	7,123	8,511	319,000	356,130	425,567	89	75
Latvia . . . . .	772	600	2) 142	39,000	30,000	2) 7,107	129	543
Netherlands . . . .	5,609	5,726	5,662	280,400	286,305	283,101	98	99
Poland . . . . .	7,937	9,192	15,553	400,000	459,575	777,642	86	51
Rumania . . . . .	2,425	1,102	2,828	120,000	60,000	141,399	220	86
Sweden . . . . .	6,382	5,189	3,343	319,100	259,425	167,167	123	191
Switzerland . . . .	163	152	140	8,200	7,600	7,016	107	116
Czechoslovakia . .	12,370	13,954	23,377	618,490	697,711	1,168,826	89	53
Turkey . . . . .	705	359	153	35,000	17,929	7,667	197	460
Yugoslavia . . . .	1,389	1,869	2,336	69,000	93,452	116,780	74	59
<i>Total Europe a).</i>	<i>126,030</i>	<i>121,218</i>	<i>154,919</i>	<i>6,303,391</i>	<i>6,066,185</i>	<i>7,745,799</i>	<i>104</i>	<i>81</i>
*U. S. S. R. . . . .	...	22,046	28,809	...	1,000,000	1,440,442	...	...
<i>Total Europe b).</i>	—	—	—	—	—	—	—	—
Canada . . . . .	1,389	1,500	902	69,000	75,008	45,088	93	154
United States . . .	33,621	29,183	23,811	1,681,000	1,459,100	1,190,528	115	141
<i>Total North Amer.</i>	<i>35,010</i>	<i>30,683</i>	<i>24,713</i>	<i>1,750,000</i>	<i>1,534,108</i>	<i>1,235,616</i>	<i>114</i>	<i>142</i>
*Japan . . . . .	...	592	552	...	29,601	27,575	...	...
Turkey . . . . .	340	246	84	16,975	12,310	4,187	138	405
<i>Total Asia . .</i>	<i>340</i>	<i>246</i>	<i>84</i>	<i>16,975</i>	<i>12,310</i>	<i>4,187</i>	<i>138</i>	<i>405</i>
*Australia . . . .	...	122	82	...	6,079	4,094	...	...
GENERAL TO- (a) TALS (b)	161,380	152,147	172,716	8,070,366	7,612,603	8,985,602	106	90

\* ) Countries not included in the totals. — a ) Not including U. S. S. R. — b ) Including U. S. S. R. — 1 ) Approximate data. — 2 ) Average 1928-29 to 1931-32.

A considerable increase compared with last year is reported in Germany, Austria, Denmark, Spain, Hungary, Great Britain, Latvia, Rumania, Sweden and Turkey in Europe with the result that the decrease in the other European countries have been largely compensated for. The data for the U. S. S. R. have

*The figures in the following table  
are supplied by the " Association Internationale Sucrière " of Vienna.*

COUNTRIES	Sugar beet		Raw sugar	
	1933	1932	1933-34	1932-33
THOUSAND CENTALS				
Germany . . . . .	173,663	149,229	28,722	23,996
Austria . . . . .	23,694	22,405	3,937	3,635
Belgium . . . . .	35,274	42,108	5,107	5,829
Denmark . . . . .	31,129	28,096	4,982	4,228
Irish Free State . . . . .	3,527	3,340	573	573
Finland . . . . .	1,102	1,173	132	140
Hungary . . . . .	17,218	15,466	2,411	2,280
Italy . . . . .	45,195	50,727	6,482	7,033
Poland . . . . .	45,305	51,961	7,871	9,210
Sweden . . . . .	38,471	33,481	6,382	5,189
Czechoslovakia . . . . .	68,592	78,907	12,370	13,954
Turkey . . . . .	5,512	2,394	785	400
Yugoslavia . . . . .	10,229	14,228	1,389	1,869
Total . . . . .	498,911	493,515	81,143	78,336
SHORT TONS				
Germany . . . . .	8,683,000	7,461,354	1,436,101	1,199,792
Austria . . . . .	1,184,700	1,120,228	196,900	181,768
Belgium . . . . .	1,760,000	2,105,000	255,364	291,432
Denmark . . . . .	1,556,000	1,404,800	249,000	211,390
Irish Free State . . . . .	180,000	167,000	29,000	29,000
Finland . . . . .	55,000	58,663	7,000	6,996
Hungary . . . . .	861,000	773,304	120,520	113,990
Italy . . . . .	2,260,000	2,536,324	324,000	352,000
Poland . . . . .	2,265,000	2,598,025	394,000	460,496
Sweden . . . . .	1,924,000	1,674,040	319,100	259,425
Czechoslovakia . . . . .	3,429,563	3,945,278	618,490	697,711
Turkey . . . . .	275,000	119,686	39,200	19,975
Yugoslavia . . . . .	511,000	711,368	69,000	93,452
Total . . . . .	24,944,263	24,675,070	4,057,675	3,917,427

not been inserted because, on the basis of the information available, no estimate can be formed, even of a largely approximate nature ; it should be noted that the figure for the past season is published with reserve.

A large increase is also forecast for North America, due exclusively to the United States.

E. R.

\* \* \*

*Germany* : Owing to the drought, the growth of sugar beet is backward.

*Austria* : At the beginning of October the sugar beet foliage was still fresh ; growth of the bulbs was not satisfactory. Here and there lifting of sugar beet had begun.

*Bulgaria* : Production of raw sugar in 1933-34 up to the end of September was 151,000 centals (7,600 short tons) against 227,000 (11,400) for the corresponding period in 1932-33, a decrease of 33.4 %.

*Irish Free State* : The sugar beet crop has not yet been harvested but the indications are that the yield will be nearly up to average.

*France* : Lifting of beet made good progress throughout the first half of October favoured by the rains at the end of the September and the subsequent fine weather. As was expected, sucrose content appears generally high but the weight of the roots is small and certainly below the level of last year and the average.

*Great Britain and Northern Ireland* : In England and Wales, the yield per acre of sugar beet is expected to be somewhat below average, but the sugar content is good.

In Scotland sugar beet benefited from the heat and sunshine of the season and the roots generally have a firm, heavy and healthy appearance.

*Hungary* : Development was hindered by unfavourable weather but the roots were sound. Towards 7 October lifting and transport had been begun in places.

*Italy* : Lifting has been completed ; in some important areas of production results are mediocre.

Production of raw beet sugar from the beginning of the season to the end of September 1933 was estimated at 8,111,000 centals (406,000 short tons) compared with 6,198,000 (310,000) in the corresponding period of 1932 ; percentage 130.9.

*U. S. S. R.* : According to the plan the factories should have received by 1 October this year 84.7 million centals (4,233,000 short tons) of beet but actually received only 14.1 million (705,000). In the first five days of October another 13.0 million (650,000), 9.9 % of the plan, was supplied to the factories.

Lifting was hindered by inadequacy of labour and means of transport. On 5 October harvesting had been carried out on 687,000 acres, 25.4 % of the plan, on the individualist holdings and on that area 51,039,000 centals (2,552,000 short tons), 19.7 % of the plan, had been obtained. The average production per acre was thus 74 centals (4 short tons).

The *sovkhozi* had on 5 October harvested 23 % of the area and obtained a quantity of roots equivalent to 15.1 % of the plan. Only 38.2 % of the labour necessary to them was available to the *sovkhozi*.

In *Ukraine* the area on which the crop had been lifted by 5 October represented 29 % of the plan. On an area of 163,600 acres in *Kiev* 11,883,000 centals (594,000 short tons) had been lifted, that is, about 73 centals (4 short tons) per acre instead of the 107 (5.4) foreseen by the plan. The unit-yield notably below that previously expected is attributed partly to the carelessness with which lifting was carried out but also to the drought that prevailed in *Ukraine* in the second half of September and first decade of October.

*St. Kitts-Nevis* : The growth of sugar-cane, which had been slackened by the drought experiment in July and August, has recovered thanks to subsequent rainfall, and crop condition has improved remarkably, so that good yields may be expected for 1934.

*Guadeloupe* : Production of raw cane sugar in the season 1932-33 was about 882,000 centals (44,000 short tons), or 13 % below that of the preceding season (1,013,000 51,000) but 87 % above the average of the five seasons 1926-27 to 1930-31 (471,000 ; 24,000), which include a very bad year 1929, when a cyclone occurred. Production this year is larger than those of all of the post war years except 1931-32.

*Formosa* : Owing to scanty rain, growth of the cane to be cut from this autumn to next spring was on 1 October mediocre. Growth of the cane planted this season was average.

*India* : In mid-October cane was doing well in Bihar and Orissa. Some damage from top-borer had occurred in the Punjab.

*Egypt* : Weather in September favoured growth and ripening. Cutting of the areas limited to early cane for local use was commenced. Crop condition on 1 October was 103 against 100 on 1 September and 103 on 1 October 1932.

*Union of South Africa* : The weather in the Natal sugar belt was hot, dry and windy during August. The rainfall was 63.50 mm. (2 ½ inches) in Zululand but negligible elsewhere. Production of refined sugar in 1933-34 is now estimated at 7,540,000 centals (377,000 short tons), in increase on the previous estimate, 5.0 % above the final estimate of 1932-33 and 20.8 % above the average of the final estimates for the five years ending 1931-32.

## VINES

In the middle of October the vintage was well advanced throughout the northern hemisphere though the summer drought had generally slackened the ripening of the grapes ; in the more forward regions in North Africa, the South of France, Italy, the Mediterranean districts of Spain, Portugal, Greece, Anatolia, it was finished or almost finished ; in the remaining regions it had begun or was already in progress.

The weather during the vintage has been very variable. As a rule it may be said that in the northern hemisphere the drought has ended. The rains at the end of September and beginning of October were generally of short duration so that the crop in the majority of areas benefited by fine weather. On the whole the development and maturing of the remaining grapes, which had been impeded by the drought, were favoured. The rains were, however, too late to bring any appreciable increase in the crop and were in some cases, as in the south of Italy, even insufficient to allow satisfactory ripening to proceed ; their favourable influence on quality was more noticeable inasmuch as the summer drought had led to a very high glucose content. In the south and southwest of France, on the other hand, where the rains were accompanied by exceptionally violent winds and at times by hail, they caused appreciable damage to the crop, even if this was localized and attenuated by the fact that part was already harvested.

Though the forecasts of very good quality this year in the majority of countries have been confirmed the quantitative results are below the expectations of last month either through the persistent drought until the end of September in the southern regions, through storm and hail damage or through the fact that losses from previous misfortunes (the very heavy cryptogamic infestation in certain important Spanish districts, the serious shedding caused by late frosts and low spring temperatures in general in the centre and east of France and the north and centre of Italy) have been greater than formerly estimated.

The most important new statistical fact to be taken into consideration since last month is the reduction in the preliminary estimate of the French vintage which, even according to the first results, scarcely appeared to exceed those of last year. The decreases in Spain and in Italy have been confirmed; last month's estimate of production in French North Africa should, it appears, be somewhat reduced.

The countries of the Danubian basin - Rumania, Yugoslavia, Hungary, Bulgaria - report a crop a little below that of last year and at least one-tenth

### Vines.

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Average							1932	Average
			1,000 acres					1,000 Imperial gallons			1,000 Amer. gallons		
Germany	206	205	202	100.7	102.1	...	37,873	49,068	...	45,482	58,927	...	...
Bulgaria 1)	229	222	208	102.8	110.0	61,703	57,722	42,503	74,100	69,318	51,043	106.9	145.2
Spain 1) 2)	3,541	3,526	3,482	100.4	101.7	410,087	466,077	495,867	492,478	559,716	595,492	88.0	82.7
France...	3,843	3,808	3,761	100.9	102.2	...	1,090,410	1,238,531	...	1,309,485	1,487,364	...	...
Greece 1) 2)	...	344	289	...	...	4) 50,959	83,911	52,998	4) 61,197	100,769	63,646	60.7	92.2
Italy 5) 6) (u)	2,358	2,433	2,107	96.9	111.9	...	...	...	...	...	...	...	...
Italy 5) 6) (m)	7,308	7,314	8,339	99.9	87.6	813,909	1,016,236	863,127	977,432	1,220,408	1,036,538	80.1	94.3
Luxemb. 1) 2)	3	3	3	90.3	83.0	1,331	891	1,361	1,598	1,070	1,635	149.3	97.8
Switzerland	33	32	33	103.1	99.5	...	9,107	12,148	...	10,937	14,588	...	...
Czechoslov.	49	47	43	103.5	113.5	7,479	9,547	7,588	8,982	11,465	9,077	78.3	99.0
Syria & Leb.	131	130	117	100.3	111.8	—	—	—	—	—	—	—	—
Algeria	929	914	710	101.6	130.8	351,961	402,872	292,393	422,673	483,813	351,138	87.4	120.4
Tunis 2) 1)	99	99	77	100.0	127.7	35,197	37,616	19,145	42,267	45,173	22,992	93.6	183.8

u) Unmixed crop. — m) Mixed crop. — 1) Production of must. — 2) Area bearing. — 3) Approximate figure calculated on the basis of the June estimate and taking into account the reduction of 198,000 acres made in the 1932 estimate. — 4) Unofficial estimate. — 5) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 6) Calculated from production of grapes for wine.

below the average; the estimate for Bulgaria, made before the vintage, should, it appears, be reduced; Yugoslavia confirms the reports of mediocre quality and quality in Hungary appears to be similar.

Greece reports a decrease of no less than one-third, according to some estimates, on the exceptionally abundant production of last year but, despite this reduction, the crop appears above the average.

The crop in Central Europe has profited from the sunny weather at the close of summer; it appears nevertheless inferior to last year and distinctly below the average; quality is reported to be good in Germany and Switzerland but rather mediocre in Austria.

Occasion may be taken to revise on the basis of these indications the forecast made last month, before the vintage, of the total production in the northern hemisphere. The figure appears at present to be distinctly inferior to that of



last year, which was 3,544 million Imperial gallons (4,256 million American gallons) and the five-year average of 3,471 (4,109) million though production in North Africa has been maintained above the mean ; the diminution appears to be about 10 %. Production this year would thus appear to show no very considerable difference from that of 1930, which was one of the three poorest since the war, but it seems, thanks to the greater importance of the North African crop, to be, if anything, rather larger ; the European crop seems, in fact, to be on the whole a little below that of 1930 and would thus seem to be, with the exception of that of 1926, the smallest of postwar years.

Stocks remaining at the end of the season do not seem to be abnormally large, though at least equivalent to those at the end of last season ; in Spain and Italy they seem to be distinctly larger, with the difference that while old crop wines appear of normal quality in Italy, Spain and France, the quality of the new crop wines is mediocre and they will be commercially absorbed only with difficulty.

Despite this and though consumption is everywhere somewhat lower and absorption by distilleries reduced, total supplies are small enough to be largely absorbed in the course of the 1933-34 season. In some large producing countries there will be superabundance and quality of the wines will make their movement easy. France appears to be in a position to import a similar quantity to that of last season, which was 506 (608) million gallons; the other importers, Switzerland, Austria, Czechoslovakia, Germany, having had a smaller production will be able to absorb somewhat more of the surplus of the exporting countries, Italy, Spain and the Danubian lands. Despite the narrowing of the great importing markets, of which the United Kingdom takes the lead, the commercial season 1933-34 therefore opens under more favourable conditions than the preceding.

Due to the delay in the vintage which has prevented a sufficiently exact idea being obtained of the amount produced, and other circumstances, such as the application of the new viticultural laws in France and Spain, which have accentuated the incertitude, and the general crisis, business has not yet attained the tempo usual for the season. Prices are everywhere firm with a tendency to rise.

P. de V.

*Germany* : The fine days at the end of the summer were quite favourable for the growth of the grapes. Vintage prospects are not everywhere satisfactory as regards quantity. With respect to quality however the 1933 season should give quite satisfactory results.

*Austria* : The fruit has a good appearance and is generally sound but ripening is late. Here and there the vintage has begun. For the time being, a crop smaller than that of last year is expected.

At the beginning of October crop condition was 3.0 against 2.7 on 1 September 1933 and 2.4 at the beginning of October 1932.

*Spain* : Rainfall nearly everywhere in September and at the beginning of October favoured the growth and ripening of grapes. They have somewhat checked the vin-

tage, but the latter, which began in some regions of the centre and north towards the end of September, in general proceeded under good conditions.

A very slight revision has been made of the estimate of the production of grapes, which has been increased to 63.1 million centals or 18 % below that of 1932 (76.9 million centals) and 23 % below the average of 1927-1931 (82 million centals).

The most important cause of the decrease is a very extensive attack of mildew and other cryptogamic diseases in the eastern province of Levant where the deficit compared with last year is over 60 % and, to a smaller extent, in Catalonia. The spring frosts, summer drought and hail which accompanied the September storms, have also caused a considerable loss in other regions, in Andalusia, the Canary Islands and Balearic Islands and particularly in Mancia, where the decrease compared with last year is 25 %.

The good crops in the central and northwestern provinces, notably Old Castille and the Asturias, cannot compensate for the deficit in other regions. Quality is generally good, sometimes very good and in any case above that of last year which was, on the whole, mediocre. Production of table grapes is also deficient and is estimated at 3,483,000 centals, a quantity 35 % smaller than that of last year (5,329,000 centals) and 32 % below the average (5,068,000 centals). Stocks from the preceding production appear to be fairly abundant on the whole; in certain centres, particularly in Mancia, fairly large quantities of small wines of poor saleable quality are reported. Available supplies for the present season are consequently well below the normal and still more below those of last year. Home consumption shows a fairly decided decrease. Exports to France, although notably larger than those of last year, are not very high and have not reached the figure fixed for quota in the season 1932-33.

The markets are fairly active; quotations are well maintained with a tendency to rise but remain extremely low.

*France:* Further and sometimes violent storms occurred throughout the country towards the end of September, particularly in southern regions. Although they had no effect on the crop in the southern plains, which had already been nearly all harvested, they caused local damage, sometimes of considerable extent, on the coasts of lower Languedoc and Roussillon; the hail also caused considerable damage specially in certain vineyards of the middle-Garonne valley and in Gascogne; the crop loss, on the whole, is not very large. In general, the rainfall as in the first ten days of the month deteriorated quality, without hardly increasing quantity in the vineyards where the vintage had been made immediately but the effect was subsequently found to be beneficial particularly in Bordelais, the Charentes, the Loire Valley, Burgundy and the banks of the Rhone.

Fine, sunny weather set in during the whole of the first half of October throughout the country, favouring everywhere the completion of maturity and the vintage.

At mid-October, the vintage was completed in the South and nearly finished in the South-west and Bordelais; it was advanced or, at least, in progress in the other regions. The situation was as follows.

In the South, production was small, due principally to the dry weather; although the rains have increased the volume of the grapes remaining, floods and storms have caused fairly considerable losses. Production may be estimated, for the four large producing departments, at 440-480 million Imperial gallons (530-580 million American gallons), or decidedly below the average of recent years and barely above those of 1932 and 1930. In Provence and on the Mediterranean coast, production is decidedly smaller by  $\frac{1}{5}$  to  $\frac{1}{4}$  than that of last year, which was very good. In the Garonne valley and Gascogne, production was compromised successively by April frosts, fairly im-

portant dropping at flowering time caused by the spring cold; summer drought and hail with the result that it seems to be about the same as that of last year, which was a very bad one and a third below the average.

In Bordelais, the vintage has been deceptive as regards quantity, owing to larger frost damage than was anticipated; production is apparently a little smaller than that of last year, or  $\frac{1}{10}$  to  $\frac{1}{5}$  below the average of preceding years.

In the Charentes and the Westcentre (Lower-Loire, Poitou Vendée), despite a little chlorosis and sometimes profuse dropping, the result appeared to be about the same as last year as regards quantity and nearly average.

In the Loire valley (Anjou and Touraine), production seems only a little smaller than that of last year and decidedly below the average, by one third.

In the East-central area, particularly in Burgundy, Beaujolais and the Côtes du Rhône and Jura, where adverse spring weather have caused a very large crop loss, the deficit is estimated at about  $\frac{1}{3}$  compared with last year and  $\frac{1}{5}$  compared with the average.

Lastly, the East-Champagne Lorraine and Alsace which have suffered still more from the adverse spring weather have only a very low production, about  $\frac{1}{3}$  smaller than last year and the average.

On the whole, production appears as regards quantity to be clearly smaller than the average of the five years previous to 1932, which was rather low at 1,238 million Imperial gallons (1,487 million American gallons). On the basis of the above information on the preliminary vintage results in the various regions, it seems hardly to differ much from that last year, which amounted to 1,091 million Imperial gallons (1,310 million American gallons).

Quality is, on the contrary, decidedly better. Fine wines of the Bordelais Burgundy, Champagne, Loire Valley and Côtes du Rhône areas promise to be excellent and comparable to those of 1929, if not better. Southern wines, which last year were of very low alcoholic content, have this year generally a high alcoholic content and are sometimes a little low as regards acidity.

Owing to the fact that the manufacture of residue wines (« piquettes ») has been regulated and the minimum degree of saleable wines has been fixed by regions, the volume of production will increase less than in an ordinary year of very alcoholic wines.

Stocks in farmer's hands, moreover, which are nearly *nil* in the South-west, the centre and East-centre do not appear to be considerable. Although producers have sold to the trade only 586 million Imperial gallons (824 million American gallons) out of the 1,144 million (1,374 million) in existence at the beginning of the season — a very small quantity — the remainder, consisting particularly of wines of low degree unsuitable for sale during the current season, should in great part, have been absorbed by untaxed consumption outside the trade.

Total home and Algerian supplies should be easily absorbed by home consumption although the latter, which is still high at 1,056 million Imperial gallons (1,268 American gallons), shows a decrease with the result that the regulation concerning compulsory holding of stocks will not be applied.

For last season, to the 363 million Imperial gallons (436 million American gallons) supplied by North Africa — which will not be in a position to furnish a similar quantity during the 1933-34 season — should be added the rather high figure of 50.6 million Imperial gallons (60.8 million American gallons) of foreign imports.

Trade stocks are high and will be difficult to market. Production of alcohol has been small and stocks are abundant, with the result that the distillation industry will find difficulty in absorbing weak wines remaining from the previous production.

The 1933-34 trade season shows more normal characteristics than the previous one. Quotations which had decreased by one third since the beginning of June, have again risen but are still much below the level of October 1932. The wine markets are rather inactive but firm.

*Hungary* : Warm weather during the first week of October was favourable for the growth of the fruit. Ripening was, however, still backward. The vintage will take place towards mid-October or in the latter half of this month.

*Italy* : The few showers of the latter half of September were on the whole beneficial to the grapes, of which ripening was favoured ; they were however, insufficient and in some southern vineyards, ripening took place in rather bad conditions.

The vintage, which began in the south toward the end of September, was general in mid-October ; it had the advantage so far of fine weather.

The first results confirm the first official forecast of mid-September. The situation on 15 October was as follows.

In the north and centre the crop is very much below that of last year ; in Piedmont and Lombardy the decline is placed at about 50 %, in Venetia, the Marches and Tuscany at about 30 %. In the southern vineyards – especially in Apulia and Sicily – the results are better and 10-15 % or more below those of last year. On the whole, as far as can be at present judged, this year's crop appeared quite 25 % below that of 1932 and 10-15 % below the average of 1927-31, which was, however, relatively low.

A private estimate gives a production of wine 792-814 million Imperial gallons (951-977 million American gallons) a figure that would not seem far from reality. In fact, if the production of wine is calculated from the preliminary estimate of grapes for wine, which was placed in mid-September at 12,590 million pounds, and the average coefficient of reduction for preceding years is adopted, the same figure of approximately 814 (977) million gallons is reached.

The quality of the must varies greatly. In the north – Piedmont and Lombardy particularly – it is very good ; glycometric grade appears 2-3° higher than that of last year, which was abnormally low. In the centre – principally Tuscany – the quality varies from passable to good according as hillside or lowland vineyards are considered but is generally much better than last year and alcohol content is higher. In the south – Apulia and Sicily – quality is average and grade often below the normal as attained last year.

It is difficult to estimate even approximately, the stocks remaining from the old crop ; on the whole, it appears they are about normal though in some centres fairly large quantities are reported, generally of good quality ; this would show that the weak wines of low grade that encumbered the market at the beginning of the last season have been mostly absorbed.

In any case supplies will not be large. The markets are fairly active though the activity is not up to the normal for the period. Prices are higher and a further increase is expected.

*Luxemburg* : Sunny days in September had a favourable influence on the quality of the grapes.

*Czechoslovakia* : Grape production is estimated at 119,050,000 pounds.

*Yugoslavia* : Frequent rains and the lack of sunny days during September have been unfavourable to vines. Owing to the propagation of cryptogamic disease, harvesting this year is forecast to be smaller than that of the preceding year. The vintage is this year a month late ; the grapes are large but sugar content is not very satisfactory.

*Palestine* : The vintage of wine-grapes was very short and only lasted about a fortnight. The yield was estimated at less than 50 % of normal. Table-grapes crops are also estimated at 50 % of normal.

*United States* : Crop condition of grapes on 1 October was 62.5 % against 74.6 % on the same date of last year.

Production of grapes is now estimated at 34,480,000 centals (short tons 1,724,000) compared with 44,075,000 (2,204,000) in 1932 and 45,667,000 (2,283,000) on the average for the period 1927-31. Percentages: 78.2 and 75.5.

*Algeria* : Sirocco and drought prevailed during the first three weeks of September and have again reduced yield. The showers which fell at the end of the month have proved beneficial to the vineyards with an eastern aspect and in these the vintage season continued up to the beginning of October.

The provisional estimate made by the Government and published in the table should be regarded as approximate only as it cannot include a factor as yet unknown, namely the area of young vines which have reached the production stage during the present year. In any case the figure of 352 Imperial gallons (423 American gallons) makes allowance for the marked reduction on the July-August estimates, caused by the persistent drought and sirocco and is generally considered to be the probable maximum.

The drought and sirocco have also caused damage to the vines themselves, and although the rains at the end of September have proved beneficial, it is to be feared that the maturing of the vine shoots may prove unsatisfactory this winter.

The wines of the present vintage have in general a high content in alcohol; the lowered temperatures caused by the showers that fell at the end of September disturbed the process of fermentation which proved abnormally difficult, but thanks to the soundness of the technique followed and the marked rise in temperature at the beginning of October it appears generally to have been concluded satisfactorily.

Very little wine remains from the last crop. Of 416 (499) million gallons on the holdings, 376 (452) million have entered into trade so that stocks remaining in growers' hands should not be very large. Trade stocks, though fairly large, are scarcely larger than those of last year. Total Algerian supplies are thus distinctly smaller than those of last year even if segregation is not decided on by the Government. Prices tend to the level of French wines so that first class wines have fallen somewhat on the Algiers market in relation to August levels. In mid-October the market was firm and fairly active.

*Tunis* : Despite some damage caused to certain vineyards by cryptogamic disease or hailstorms, the general conditions remain favourable to the vines, crop condition of which at the end of September was good (120), as it has been since the beginning of the summer and also the same as at the same date of last year.

The estimate of production published is still approximate and was established on the basis of the first vintage results. Stocks remaining at the season were estimated officially at about 9.9 million Imperial gallons (11.9 million American gallons) and total supplies should therefore this year exceed 44 million Imperial gallons (53 million American gallons).

*Australia* : The winter (June-August) was very dry; cultivation and other preparatory work was at times impossible. Good rains were required in order to restore soil moisture to a normal level and permit growth. Pruning will be late this year with consequent reduction of the risk of late frosts.

## OLIVES

*Greece* : The losses caused by the stormy autumn weather have brought about a reduction of the olive crop in relation to that of last year. Production of olive oil this year is, according to the first estimate, 2,094,000 centals (27,522,000 American gallons), 29.3 % below that of 1932, which was 2,961,000 (38,913,000) but 5.0 % above the average of 1927-31, which was 1,997,000 centals (26,245,000 American gallons).

The crop of table olives is, according to the same estimate, expected to be 573,000 centals against 796,000 in 1932, a decrease of 28 %, and the average of 689,000 in 1927-31, a decrease of 17 %.

*Italy* : Growth conditions remain good but infestation by olive fly continues to be reported.

*Palestine* : Weather conditions during September have been normal. The olive prospects for the country are poor and crop condition is the same. Picking of olives has started in the irrigated groves in Tiberias Sub-District, and in the Southern Sub-Districts of the country.

*Algeria* : The drought, which persisted into the first decade of October, apart from a few slight showers and was accompanied by high temperatures and periods of scirocco, caused the shedding of much fruit and hindered development of those remaining. The crop has thus been very greatly reduced.

The first official estimates at the end of September indicate a production of oil of about 360,000 centals (4,700,000 American gallons), an amount smaller than that estimated at the same date last year for the 1932-33 crop, 424,000 centals (5,405,000 American gallons) and even than the estimate of February for the same crop, 384,000 (5,042,000); compared however, with the final figure recently published for the production of 1932-33, approximately about 290,800 centals (3,821,000 American gallons) when account is taken of the fact that the figure for Oran is calculated from the production of olives for oil, it would indicate a crop 20-25 % above that of last year. In any case the coming crop will be distinctly smaller — by about 25-30 % at least — than the average for the five years ending 1931-32, which was 491,500 centals (6,459,000 American gallons).

The moisture brought by the showers at the end of September and beginning of October was beneficial for the development of the remaining olives but still insufficient. In consequence of the warm dry weather that was reestablished in the first decade of October conditions of the crop remained very poor and the official forecast was considered as a maximum to be attained only if conditions became very favourable and particularly if good rains supervened.

According to the estimates made in the first half of March the number of olive-trees in bearing was 7,851,000, that is, 860,000 or 12 % greater than the figure of last year and 470,000 or 6 % greater than the 1927-31 average. The total number of olive-trees cultivated, whether or not bearing, which was 9,801,000 at the end of winter 1932-33, had also increased by 727,000 with respect to that in 1932 and by 483,000 with respect to the average while the number of wild olives and oleasters uncultivated fell from 6,142,000 in 1932 to 5,405,000 in 1933.

The area under olive plantations was estimated for the first time, at the end of the winter 1932-33, at 200,000 acres.

*Tunis* : Conditions have continued to favour olives, crop condition of which on 1 October remained good (120), as during the whole of the summer, and as at

the same date of last year. Production of oil is forecast to be about the same as last season, namely about 1,323,000 centals (17,382,000 American gallons); it should therefore exceed the average production of the preceding five years (783,000; 10,284,000), by nearly two thirds.

It should be noted that, although the total number of olive trees has not increased much (16,613,000 this year, 16,463,000 in 1932 and 16,513,000 on the average), that of trees in bearing is 843,000 larger than last year and 897,000 larger than the average (12,299,000 this year, 11,456,000 in 1932, 11,401,000 on the average; relative increase: 7 % and 8 % respectively).

## COTTON

The October report published by the U. S. Government containing the third estimate of production, forecasts a production of 61,590,000 centals (12,885,000 bales) of ginned cotton. This figure shows an increase of 2,251,000 centals (471,000 bales) or 3.8 % on the September estimate, of which 1,793,000

### *Cotton.*

COUNTRIES	AREA						PRODUCTION OF LINT							
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		1933/34	1932/33	Average 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		
				1932/ 1933	Average 1933							1932/ 1933	Average 1933	
1,000 acres			= 100	= 100	1,000 centals			1,000 bales of 478 lb.			= 100	= 100		
Bulgaria . .	79	20	13	401.3	591.8	99	40	18	21	8	4	246.9	553.6	
Spain . . .	19	20	23	91.8	80.9	44	23	21	9	5	4	187.9	213.1	
Greece . . .	1) 93	50	44	186.2	212.2	...	105	69	...	22	15	...	...	
U.S.S.R. . .	2) 4,977	5,139	3,249	96.8	153.2	3) 9,389	8,497	6,577	3) 1,964	1,778	1,376	110.5	142.8	
U. S. A. . .	30,036	35,939	40,996	83.6	73.3	61,590	62,147	70,061	12,885	13,002	14,657	99.1	87.9	
Mexico . . .	421	188	406	224.5	103.8	1,068	453	1,043	223	95	218	235.6	102.4	
China . . .	3) 5,945	5,633	4,937	105.5	120.4	14,307	10,803	10,224	2,993	2,260	2,139	132.4	139.9	
Korea . . .	429	393	481	109.1	89.1	701	606	643	147	127	134	115.6	109.1	
India 4) . .	19,641	18,415	20,655	106.7	95.1	—	—	—	—	—	—	—	—	
Syria & Leb.	19	20	50	97.2	38.8	...	19	55	...	4	12	...	...	
Fr.Eq. Africa	...	124	30	...	...	93	60	16	19	12	3	155.6	587.4	
Egypt . .	1,873	1,135	1,840	165.0	101.8	7,846	4,909	7,393	1,641	1,027	1,547	159.8	106.1	

1) Unofficial estimate. — 2) Area cultivated up to 10 June. — 3) First estimate. — 4) Second estimate.

centals (375,000 bales) or about 80 % in Texas, and of 2,729,000 centals (571,000 bales) or 4.6 % on that of August; whereas, compared with the final estimate of last year, there is a decrease of 557,000 centals (117,000 bales) or 0.9 % and compared with the average of 1927-31, a decrease of 8,471,000 centals (1,772,000 bales) or 12.1 %. The yield forecast on October 1 is 205.3 lb. of lint per acre, against 197.8 on September 1, 198.4 on August 1, 173.3 in 1932 (final estimate)

and 167.4 on the average for the period 1922-1931. All of the States show increases compared with the September yield, except Florida, Mississippi, Louisiana and Arkansas.

Crop condition on October 1 was 66.7 per cent, against 54.2 last year and 55.7 on the average for 1922-1931. It is the highest condition recorded for October, with the exception of that of October 1931, which was 69.3. During September and the first half of October, the weather remained exceptionally favourable for the ripening of late bolls. Picking is very advanced and is forecast to be completed in the first half of November. Ginning also made excellent progress in September and has so far been effected under very favourable conditions.

Industrial activity in the United States and exports show considerable progress compared with last year. The market remains active. The official October report, which is apparently rather bearish, has not, on the contrary, produced any effect on quotations, either because it had been anticipated, or because the market was under the influence, very often preponderant, of factors other than the size of this year's crop and the world carry-over of American cotton, on 31 July 1933, which shows a decrease of 1,364,000 bales compared with last year. The dollar-sterling exchange, the margin between American cotton quotations and those of other cottons and prospects for production and consumption outside the United States are the factors which exercise the most influence on quotations. There should also be added the agricultural policy of the Government which, by granting farmers advantageous loans on their cotton on the understanding that they engage to reduce acreage in 1934 by 40 % assists to maintain quotations between 9 and 10 cents per lb. The success of the Government plan, might have the result of reducing next year's acreage to not more than 25 million acres, yielding a crop of about 9.2 million bales and the reduction of the world carry-over of American cotton, at the present rate of consumption, to about 4,700,000 bales, namely to nearly the figure of 1929.

The Indian Government has, on October 24, published the second estimate of the cotton area in the current season. According to this estimate, which includes the total area destined to the cotton crop in India and which refers to the whole of the area sown up to October 1, there is this year an increase of 6.7 % compared with the final figure of October 1932 and a decrease of 4.9 % compared with the average of 1927-1931. The crop was in good condition, owing to the, on the whole, favourable weather and was ripening rapidly.

The negotiations between the British, Indian and Japanese delegations at Simla on the question of Japanese competition in India continue without interruption and the market is optimistic as regards the outcome. There is no revival of activity to be reported; prices remain low, lower than those of American cotton and this is encouraging exports to Europe, which are larger than those of last year, while Japan and China are importing much less than last year. On the whole, however, exports from 1 August to 15 September exceed those of the same period last year but are about one-third less than those of 1931.



On 2 October the Egyptian Government published the first estimate of production, which is smaller than all the private estimates and leads to the expectation that the second estimate will be larger, the more so since picking has been carried out under generally favourable conditions and ginning yields are higher for all varieties than those of last year. Production, according to the first estimate, is 59.8 % above the final figure of last year and 6.1 % above the 1927-31 average. It has been exceeded only four times: in 1925, 1928, 1929 and 1930. The yields forecast for unginned cotton are below those of last year but above the average. Production is classified as follows in thousands of bales of 478 lb. net weight: above  $1\frac{3}{8}$  inches, 443 against 361 in 1932; above  $1\frac{1}{4}$  inches 91 against 73 in 1932; above  $1\frac{1}{8}$  inches, 1,108 against 570 in 1932. Included in the 443,000 bales of the first class are 222,000 bales of Sakellaridis, against 252,000 bales in 1932, 273,000 in 1931, 455,000 in 1930 and 581,000 in 1929. Within five years the production of this variety has fallen by 62 %. On the other hand the production of other cottons above  $1\frac{3}{8}$  inches is constantly increasing. The principal cause of this phenomenon is the same which has reduced to a very small quantity the West Indian Sea Island: industry is no longer in a condition to purchase as formerly these two very fine cottons and is replacing them more and more by cheaper varieties.

The Egyptian market is active, due especially to the shrinkage of the margin between American and Egyptian and its favourable technical and statistical position. Arrivals from the interior and export are very much above the corresponding figures of the last two years. Ginning is proceeding rapidly.

News from the U. S. S. R. allows the forecast an abundant production, 10.5 % larger than that of 1932. Yields are higher than those of last year and picking is progressing fairly well, better than last year.

On the basis of the data at present available it may be forecast very roughly that production in 1933-34 will be about 25.4 million bales of 478 lb. net weight, against about 23 million bales in 1932-33. World stocks on 31 July 1933 were about 16.6 million bales against 17.1 in 1932. This makes available supplies for 1933-34 about 42 million bales against 40.1 in 1932-33. Consumption by industry in 1932-33 was about 23.5 million bales, an increase of 9 % on that of the preceding season. If, as all the facts render probable, the consumption of 1933-34 rises to 24 million bales, world stocks of all cotton on 31 July 1934 will be about 18 million bales.

I. S.

*U. S. S. R.*: On 5 October the Central Asian republics had delivered to Government organs 35 % of the quantities fixed under the plan; for the whole Union the proportion was 32.2 % against 25.6 % up to the same date last year.

Picking had entered on its most active phase.

According to the Soviet press, the current season's cotton crop is abundant and of good quality and in both respects entirely covers the needs of the textile industries. A provisional estimate places the current year's production at 1,346,200 metric tons of unginned cotton, equivalent to 9,389,000 centals or 1,964,000 bales of 478 lb. net

weight of ginned cotton. Up to 15 October the Government had purchased in the whole Union 631,276 metric tons of unginned cotton, or 46.9 % of the quantity planned.

*United States* : In the week ended on September 27 conditions were generally decidedly favourable owing to the warm and mostly sunny weather with little rain. Picking progressed in Texas and had been about completed in the earlier region. In other areas the bolls opened rapidly and picking and ginning made good progress. The weather favoured weevils in some localities of Arkansas. In the subsequent week to October 4 the weather was warm and sunny in much of the Belt with rainfall mostly light except in north-central districts. The crop was nearly all open and picking was making satisfactory progress except in wetter sections. In Oklahoma harvesting had been half finished. Picking was hindered by wet weather in several central States but made satisfactory advance in the eastern belt. In the week ended on October 10 the weather was fair and sunny in practically all parts of the cotton belt. Temperatures were low but no frosts occurred. Late cotton continued to open rapidly. Picking and ginning made excellent progress. By 25 October the cotton harvest had been almost finished.

The quantity of cotton, not including linters, ginned from the crop of 1933 to the close of business on 15 September was 3,101,000 running bales (counting round bales as half bales), against 2,646,000 in 1932, 2,093,000 in 1931, 3,736,000 in 1930, 3,352,000 in 1929 and 2,501,000 in 1928. To the close of business on 30 September : 5,851,000, against 4,836,000 in 1932, 5,410,000 in 1931, 6,304,000 in 1930, 5,903,000 in 1929 and 4,961,000 in 1928. To the close of business on 17 October: 8,606,000 against 7,309,000 in 1932, 9,497,000 in 1931, 9,255,000 in 1930, 9,095,000 in 1929 and 8,151,000 in 1928.

*Haiti* : Damage by insects in the cotton plantation of the department of Arbonite has been checked, thanks to rainfall in August and to clearing carried out on the recommendation of the agricultural agents. In the department of the West production is anticipated to be exceptionally abundant.

*India* : According to a telegram received by the Institute on 9 October the area under cotton in the Punjab this year is 2,445,000 acres against 2,050,000 in 1932-33, an increase of 19.3 %, and 2,297,000 on the average of the five years ending 1931-32, an increase of 6.5 %. Crop condition was 89 % of normal.

A telegram of the same date from Madras contained the second estimate of area sown to cotton in that province, 740,400 acres, a decrease of 10.0 % on the corresponding figure of 822,300 acres in 1932-33 and an increase of 1.8 % on the five year average.

In Sind, where there had been an absence of rain, picking was proceeding in the last days of September and the first week of October. There had been damage from white ant in the Dadu and Thaparkar districts.

The Central Provinces reported on 25 September that heavy rain and floods had caused damage.

*French West Africa* : The area under cotton in 1933-34 in the principal administrative circles of Dahomey is about 62,000 acres against only 40,000 last season for the whole Colony ; from 32,000 acres in 1925 the crop steadily extended to 109,000 acres in 1929 and 1930 and diminished considerably in the two following years. The results obtained in Haut-Dahomey for 1932-33 were good.

Plantings are also extending in Senegal, where there was a continuous regression from 1927 to 1931, when the area fell to 6,000 acres.

*Egypt*: In September temperatures were generally fairly favourable. Picking was general throughout the country but about two weeks later than last year. Leaf worm has caused appreciable losses in Sakellaridis in the north of the Delta. Prospects for the second picking are fairly good. Ginning results appear better than last year.

During the first half of October the weather conditions were favourable to the opening of late bolls in all areas. Picking was general in Lower and Middle Egypt, where 75 % of the crop has already been picked. This percentage, however, is less than that of last year owing to late maturation and to the inclination on the part of a great number of growers to collect the crop in one picking. Ginning reports received up to now show an increase in out-turns in all varieties as compared with last year.

Cotton ginned from the beginning of the season (1 September) up to the end of September was as follows, in bales of 478 lb. net weight :

	1933	1932	1931	1930	1929
Sakellaridis . . . . .	1,080	5,730	4,230	8,430	14,320
Other varieties above :					
1 3/8" . . . . .	3,200	4,570	71,440	146,650	156,450
1 1/4" . . . . .	1,090	3,130			
1 1/8" . . . . .	128,700	73,070			
<i>Total</i> . . . . .	134,070	86,500	75,670	155,080	170,770
Scarto (linters) . . . . .	1,170	1,270	1,330	2,060	2,260

*Uganda* : During the month of August rains were fairly general and were particularly heavy in Lango and Teso. In Uganda some plantings were to be made in September and a little also in the Eastern Province. Final figures of acreage will very probably, however, be below those of last year, though all reports indicate that supplying of blanks has been well carried out. The crop has been planted late and it is too early to give any indication of probable yield.

## FLAX

*Linseed*. — The severe regression in the area under linseed in almost all the producing countries of Europe during the last few years has this year been checked with the result that the area cultivated in 1933, while remaining distinctly below the five-year average, shows a slight increase on that of last year.

The crop, which has been generally favoured by the weather in those European producing countries for which official data are available, has also undergone an increase with respect to the preceding season, though remaining appreciably below the average. France, Poland, the Netherlands and some other countries of less importance as producers have not yet communicated their estimates but there are grounds for believing, when account is taken of the favourable weather, that in these countries also the crop has been satisfactory.

In North America production this year has been distinctly smaller, due to unfavourable weather and to the appreciable reduction in the area under the crop. In fact, for North America as a whole, total production of linseed is 42.8 %

below that of last year and 63.4 % below the 1927-31 average, while the total sown area shows a decline of only 21.2 % and 41.4 % respectively.

As a result of this small crop the United States and Canada, which some years ago lost its place as a large exporter, will be obliged to import large quantities in 1933-34.

In India production has been on the whole good, amounting to 9,028,000 centals (16,121,000 bushels) against 9,319,000 (16,641,000) last year and 8,221,000 (14,681,000) on the average, percentage relation to the latter figures being 96.9 and 109.8 respectively. Since March the movement of the crop, favoured in particular by the demand in the United States, has been very active, attaining a maximum of about 1,102,000 centals (1,968,000 bushels) last August. The weather in August and September was characterized by exceptionally abundant monsoon rains. Preparations for autumn sowing were carried out in good conditions and it was expected that the area sown this year would be larger than that of last year. Sowings had made good progress, thanks to sunny and cool weather in the Central Provinces, the most important producing area of India.

In Argentina, according to a telegram of 18 October from the Ministry of Agriculture, crop condition is on the whole average. Serious damage has occurred over a large part of Córdoba and in Santa Fé, where the development of the crop, particularly in the north, has not been satisfactory. It is, moreover, anticipated that this year larger damage will be recorded than previously in the Provinces of Córdoba and Santa Fé, which, with the Provinces of Entre-Ríos and Buenos Ayres, are the most important producing centres of flaxseed in the Argentine Republic.

The same cable communicates the second estimate of the area sown to flax, now estimated at 7,166,161 acres, with an increase of 247,109 acres on the preceding estimate made last August. The new estimate still remains below both the final figure of last year (— 3.2 %) and also the average of the preceding five years (— 3.8 %).

The decrease in the area sown has occurred particularly in the Province of Santa-Fé owing to the prolonged drought in August and the first half of September and to the lack of seed necessary for re-sowing the fields destroyed by frosts in the North.

The new crop will not reach maturity for about another two months; it is evident that numerous uncertain factors do not permit the formulation at present of an exact forecast of Argentine production of flaxseed. According to a private estimate Argentine production may be estimated at 37,500,000 centals (67,000,000 bushels); it seems improbable, however, on the basis of the latest official information, that this quantity will be attained. At this moment, any judgment on the size of the crop can only be made with reserve as the month of November, owing to variable weather and the possibility of locust attacks, is the most critical period for flax-growing in Argentina. The old crop has been almost completely sold; towards the end of September supplies on the Argentine market amounted to only 1,323,000 centals (2,362,000 bushels), a quantity below the monthly average export. This situation has not only assured the absorption abroad of stocks in India, but has also

*Flax.*

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver.							1932	Aver.
= 100 = 100				1,000 centals				1,000 pounds				= 100 = 100	

*Fibre.*

Germany . . . .	12	11	30	108.1	40.2	—	—	—	—	—	—	—	—
Austria †) . . .	4	8	10	53.9	42.2	63	106	138	6,305	10,582	13,814	59.2	45.6
Belgium . . . .	27	21	54	128.7	49.3	191	151	439	19,113	15,078	43,874	126.8	43.6
Bulgaria . . . .	1	1	1	148.5	167.6	4	2	2	419	163	191	256.8	219.7
Estonia . . . .	41	36	75	113.3	54.6	109	84	194	10,857	8,449	19,352	128.5	56.1
Finland †) . . .	10	10	10	102.3	97.1	—	33	28	—	3,282	2,769	—	—
France . . . . .	2) 28	23	71	124.0	39.7	—	121	518	—	12,100	51,840	—	—
N. Ireland . . .	10	6	27	160.6	36.7	—	26	110	—	2,565	10,976	—	—
Hungary . . . .	19	16	22	120.7	87.0	—	51	85	—	5,136	8,532	—	—
Latvia . . . . .	103	78	139	130.9	73.8	283	208	385	28,263	20,812	38,524	135.8	73.4
Lithuania . . .	135	106 †)	200	128.1	—	3.97	314	671	39,656	31,442	67,135	126.1	59.1
Netherlands . .	12	5	33	235.7	34.9	75	31	225	7,496	3,086	22,503	242.9	33.3
*Poland . . . .	—	231	279	—	—	—	564	1,127	—	56,431	112,745	—	—
Rumania . . . .	45	54	50	84.1	90.4	—	123	74	—	12,322	7,402	—	—
Czechoslovakia .	18	16	40	109.8	44.4	83	72	175	8,271	7,243	17,482	114.2	47.3
U. S. S. R. †) .	5,288	6,202	4,006	85.3	132.0	—	12,125	8,448	—	1,212,546	844,797	—	—
Egypt . . . . .	3	2	3	148.1	124.3	25	15	18	2,494	1,501	1,822	166.1	136.9
TOTALS . . . .	5,756	6,595	4,771	87.3	120.8	—	—	—	—	—	—	—	—

*Linseed.*

	Thousand bushels of 56 pounds													
Austria . . . .	3	5	6	54.2	40.9	9	20	23	17	36	41	45.7	40.1	
Belgium . . . .	27	21	54	128.7	49.3	143	113	263	256	202	470	126.5	54.5	
Bulgaria . . . .	1	1	1	148.5	167.6	6	6	4	11	11	7	97.1	159.3	
Estonia . . . .	41	36	75	113.3	54.6	130	86	198	232	153	354	151.4	65.5	
*Italy 4) . . . .	20	22	32	90.2	61.1	...	54	54	...	96	96	...	...	
Latvia . . . . .	103	78	139	130.9	73.8	247	197	359	441	352	640	125.4	68.9	
Lithuania . . .	135	106 1)	200	128.1	—	464	350	745	829	626	1,331	132.6	62.3	
Rumania . . . .	45	54	50	84.1	90.4	220	209	188	394	374	335	105.3	117.5	
Czechoslovakia .	18	16	40	109.8	44.4	60	53	140	107	95	250	112.7	42.8	
—	—	—	—	—	—	—	6)	—	—	6)	—	—	—	
*U. S. S. R. . .	5) 6,348	7,784	5,238	—	—	...	...	14,046	...	...	25,081	...	...	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Canada . . . . .	243	454	489	53.6	49.7	423	1,370	2,026	756	2,446	3,619	30.9	20.9	
United States . .	1,755	2,081	2,915	84.3	60.2	4,139	6,601	10,452	7,391	11,787	18,664	62.7	39.6	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	
India . . . . .	3,239	3,301	3,123	98.1	103.7	9,027	9,318	8,221	16,120	16,640	14,680	96.9	109.8	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Egypt . . . . .	3	2	3	148.1	124.3	27	16	20	49	28	35	174.6	140.2	
Eritrea . . . . .	4	2	—	150.0	—	20	17	—	35	30	—	119.2	—	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	
*Argentina . . .	7) 7,166	7) 7,401	7) 7,448	96.8	96.2	...	29,291	42,388	...	52,305	75,694	...	...	
*Uruguay . . . .	266	337	324	79.0	82.2	...	827	1,915	...	1,476	3,419	...	...	
TOTALS . . . .	5,617	6,157	7,095	91.1	79.1	14,915	18,356	22,639	26,638	32,780	40,426	81.3	65.9	

\* Countries not included in the totals. — †) Production expressed in terms of air-dried stalks. — †) Flax and hemp. —  
 2) Area sown to 1 June. — 3) "Dolgunetz". — 4) Beginning from 1931 the figures have been calculated taking into  
 account the results of the next agricultural survey. — 5) Area sown up to 16 June; that of the plan is 7,082,000 acres. —  
 6) Average 1927-30. — 7) Area Sown.

encouraged Indian producers to increase their flax sowings, now in progress. This tendency has been enhanced by the forecast of a not very satisfactory Argentine production. In Uruguay the area sown this year has, owing to apprehensions of a locust invasion, been reduced by 21.0 % compared with last year and by 17.8 % compared with the average of the preceding quinquennium.

For the U. S. S. R. only the figure for area sown was available up to 10 June and this was about 700,000 acres below that envisaged in the plan. It should be observed, however, that the U. S. S. R. crop is not important as regards world supplies because it is almost entirely absorbed by home consumption. Summarizing, it may be stated that production of flaxseed this year was satisfactory in Europe, decidedly deficient in North America and normal in India and in less important countries; finally, for Argentina the quantity of production is still uncertain but will probably exceed the very reduced crop of last year.

A. d. F.

*Fibre.*—In the analysis published in our January Crop Report of the current year of the situation of flax fibre in Europe at the end of 1932, the year in which the area under this crop in the flax producing countries (excluding the U. S. S. R.), reached a minimum for the post-war period, it was stated that, as a further increase in the area of flax for fibre of the U. S. S. R. was not anticipated, "a slight recovery in flax prices, recorded during the last month of 1932, might constitute a stimulant, if not to an increase in the flax area in European countries, at least to prevent a new reduction compared with the minimum reached in 1932".

Flax prices in the first half of 1933 rose again compared with those at the end of 1932, creating more favourable conditions for flax production in the current year. As an indication, prices of "Riga Z. K." flax at London may be taken. These monthly average prices expressed in gold francs per quintal are as follows :

1932 July . . . . .	74	1933 January . . . . .	95
» August . . . . .	75	» February . . . . .	95
» September . . . . .	81	» March. . . . .	97
» October . . . . .	85	» April . . . . .	97
» November . . . . .	84	» May . . . . .	97
» December. . . . .	92	» June . . . . .	94

Besides the more remunerative prices in the period now under consideration, which have created more favourable conditions for flax growing in 1933, a similar influence has been exerted by some measures assisting flax production in several countries, among which may be mentioned France, Poland and Czechoslovakia. As a result of this situation, there occurred some increase in the flax area. In

fact, from the data now possessed for 14 to 21 flax producing countries of Europe (excluding the U. S. S. R.), which also included the most important producers of flax fibre in Europe (Lithuania, Latvia, Estonia, France, Belgium and Czechoslovakia), it is found that this year the area cultivated is about  $\frac{1}{5}$  larger than that of last year. Among the important flax-producing countries for which data are still lacking, figure only Poland and Yugoslavia, for which the reduction in the flax area compared with 1932 is almost certainly impossible. For the five countries, Spain, Great Britain, Italy (for which the total flax area is possessed (but not that under flax for fibre), the Irish Free State and Sweden, changes in area, even if recorded, cannot have an influence, owing to the fact that they occupy a very limited area (about 17,300 acres in 1932).

Excluding for the moment, therefore, Poland and Yugoslavia, for all of the other 19 European flax producing countries, this year's area may be calculated at about 494,000 acres against 410,000 last year, with an increase therefore of 20 %. In 1932, all of these 19 countries occupied about  $\frac{7}{10}$  of the flax area in Europe excluding the U. S. S. R.

In the U. S. S. R., according to the preliminary data now available, the area of flax for fibre has notably decreased, by 14.7 % compared with 1932.

Given the importance of the U. S. S. R. as an exporting country, it should be useful to know its exports of flax, tow and waste during the last ten years. This export reached, during the five-year period 1923-27, an average of 105,615,000 lb.; in 1928, 93,891,000 lb.; in 1929, 178,692,000 lb.; in 1930, 172,607,000 lb.; in 1931, 175,861,000 lb. and in 1932, 174,155,000 lb.

During the first months of 1932, exports reached 123,898,000 lb against 117,110,000 lb. during the corresponding period of last year.

Owing to the importance of the U. S. S. R. in world production of flax for fibre, the increase in area this year in the European producing countries is considerably smaller than the decrease in the U. S. S. R., as a result, it may be considered that in the current year, the total area of flax for fibre in the European countries and the U. S. S. R. is about 13 % smaller than that of last year.

As regards production, there are at present available data only for the following eight countries: Austria, Belgium, Bulgaria, Estonia, Latvia, Lithuania the Netherlands and Czechoslovakia. The yield per acre in 1933 in all of these countries was larger than last year and also than the five-year average of 1927-31 except Estonia and Lithuania, in which the average was, on the contrary, slightly larger. The eight countries considered have produced a total of 115,523,000 lb. in 1933 against 86,862,000 in 1932, namely an increase of 33 %; the total area harvested was 343,000 acres against 274,000 namely an increase of 25 %. In Northern Ireland production is anticipated to be abundant. For the U. S. S. R., a good yield per acre is forecast, exceeding that of last year, which was about 196.3 lb. per acre.

Summarising, it may be considered that, in the European countries, production will exceed that of last year probably by about at least  $\frac{1}{5}$ , whereas, in the U. S. S. R., given the notable decrease in area, it should, despite the larger yield per acre, be smaller than that of last year.

Despite the decrease forecast in total production this year, prices from July onwards have decreased. In fact, for " Riga Z. K. " flax at London, prices expressed in gold francs per quintal were as follows : 90 in July ; 86 in August ; 76 in September and 74 in the first half of October.

This tendency has evidently been influenced by the course of prices of other textiles, particularly of cotton.

In September and the first half of October, the flax market was quiet.

I. G.

*Great Britain and Northern Ireland* : The flax crop in Northern Ireland has generally bulked well and is of good length. The quality also is stated to be quite good. Where scutching has started the yields have been satisfactory and the fibre of medium quality, but in some districts scutching has been held up owing to scarcity of water.

*Hungary* : Production of seed was fairly good and that of fibre average.

*U. S. S. R.* : The unit-yield of flax is this year considered to be good and much above that of last year, the increase being attributed in large part to the earliness of sowing and to the hoeing carried out on a considerable portion of the area. Harvesting, despite the unfavourable weather, took place when the crop was in the first or yellow phase of ripening and was soon over. This year pulling and ginning were both completed earlier than last year.

At the beginning of October pulling had been carried out on 94.8 % of the area sown.

*Argentina* (Telegram of 18 October) : Condition of linseed is on the whole good. In the north of Santa Fé growth has not been satisfactory and it is expected that there, as in a large part of Córdoba, this year only a part of the sown area will be harvested.

*Uruguay* : According to an official report of 9 September, the work of preparing the soil and the sowings of flax have been carried out in particularly favourable conditions.

Flax sowing was completed towards the end of August and the general condition of the crop was excellent. The area under flax for the current year is less than that of the previous year on account of the fear of locust attacks.

*India* : In the Central Provinces, the principal area of production, it was reported at the beginning of October that the weather had been clear and warm, with occasional showers. Sowing had begun in the Jubbulpore and Hoshangabad districts.

## HEMP

*Hungary* : Production of seed was fairly good and that of fibre average.



*Hemp.*

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	

*Fibre.*

Germany 1) . . . .	1	1	1	65.9	35.3	—	—	—	—	—
Austria 2) . . . .	1	1	1	91.4	86.5	1,521	1,631	1,765	93.2	86.2
Bulgaria . . . . .	16	11	9	144.3	169.7	6,724	3,906	3,034	172.2	221.7
France . . . . .	6	6	11	108.9	59.0	...	5,311	10,057	...	...
Hungary 3) . . . .	21	17	20	127.2	104.9	...	10,965	13,084	...	...
Italy 4) . . . . .	146	134	203	109.5	72.0	...	122,441	177,868	...	...
Poland . . . . .	...	79	77	...	...	...	22,274	42,372	...	...
Rumania . . . . .	115	103	97	111.2	118.5	...	57,137	42,628	...	...
Czechoslovakia . .	19	19	23	98.8	83.1	11,695	13,134	12,623	89.0	92.6
U.S.S.R. . . . .	5) 1,344	2,333	2,175	—	—	...	...	6) 708,089	...	...
Syria and Lebanon	2	7	6	35.6	37.0	...	3,108	3,996	..	...

*Hempseed.*

Austria . . . . .	7) 16	7) 11	7) 9	75.0	47.6	110	154	210	71.4	52.5
Bulgaria . . . . .	16	11	9	144.3	169.7	6,393	4,272	2,348	149.7	272.3
Hungary 3) . . . .	21	17	20	127.2	104.9	...	7,253	7,726	...	...
Poland . . . . .	...	79	77	...	...	...	313	466	...	...
Rumania . . . . .	115	103	97	111.2	118.5	44,093	42,606	23,614	103.5	186.7
Czechoslovakia . .	19	19	23	98.8	83.1	7,526	8,357	9,268	90.1	81.2
U.S.S.R. . . . .	5) 1,344	2,333	2,175	—	—	...	...	6) 1,020,148	...	...
Syria and Lebanon	2	7	6	35.6	37.0	...	1,190	1,089	...	...

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Unmixed crops. — 4) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 5) Area sown up to 10 June; that of the plan is 2,217,000 acres. — 6) Average 1927-30. — 7) Area inferior to 500 acres

**HOPS**

*Hungary* : Production has been average.

*Hops.*

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
Germany . . . . .	24	20	34	118.7	68.8	...	10,929	23,864	...	...
Belgium . . . . .	2	1	3	116.4	54.4	1,765	1,531	3,816	115.2	46.2
Engl. and Wales . .	7	7	9	102.8	77.1	...	21,056	28,627	...	...
Hungary . . . . .			1	148.0	66.5	...	141	265	...	...
Czechoslovakia . .	2) 27	2) 24	38	113.5	69.8	...	16,583	26,083	...	...
United States . . .	27	22	23	122.9	116.4	37,724	24,120	29,331	156.4	128.6

1) Average 1929 to 1931. — 2) Area inferior to 500 acres.

## TOBACCO

*France* : The storms at the end of September caused losses in the southwest. The crop had already suffered from drought.

*Hungary* : At the end of the first week in October harvesting had been generally completed. Production is average and quality good.

*Tobacco.*

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
*Germany 1) . . . .	30	27	26	110.6	115.5	...	62,224	2) 51,105	...	...
Belgium . . . . .	7	7	7	101.4	90.7	13,726	13,688	15,290	100.3	89.8
Bulgaria . . . . .	62	47	75	130.8	82.9	42,439	31,213	56,724	136.0	74.8
Spain . . . . .	12	10	7	120.7	165.8	14,330	16,605	10,074	86.3	142.2
Greece . . . . .	3) 190	157	231	121.0	82.0	3) 80,084	64,498	132,179	124.2	60.6
*Hungary . . . . .	44	61	58	72.1	75.7	...	87,074	69,732	...	...
*Czechoslovakia . .	25	25	17	100.4	146.8	...	33,069	20,922	...	...
United States . .	1,740	1,422	1,907	122.4	91.2	1,413,373	1,015,512	1,474,666	139.2	95.8
Japan . . . . .	84	84	90	100.2	92.8	139,200	138,230	145,584	100.7	95.6
*Syria and Lebanon	8	11	10	74.7	81.2	...	5,669	6,397	...	...
Algeria . . . . .	49	59	61	83.2	81.1	33,069	40,663	48,363	81.3	68.4
TOTALS . . . . .	2,144	1,786	2,378	120.2	90.0	1,736,221	1,320,409	1,882,880	131.5	92.2

\* Countries not included in the totals. — 1) Production for sale. — 2) Year 1931. — 3) Unofficial estimate.

*Argentina* : Tobacco production during the season 1932-33 is estimated at 296,200 centals compared with 289,500 in 1931-32 and 246,300 on the average for 1926-27 to 1930-31. Percentages: 102.3 and 120.2.

*Haiti* : During August preparation of the soil and the first tobacco sowings were effected under good conditions.

*Japan* : Weather conditions were favourable for tobacco on 1 October.

*Palestine* : Production of tobacco is below average. Crop condition is fair to poor.

## OTHER PRODUCTS

**Cacao.**

*Brazil* : According to the Bolsa de Mercadorias of Bahia the 1932-33 crop in Bahia amounted to 208 million pounds against 203 million in 1931-32. Of the 1932-33 crop the production in Ilheus was 139 million pounds. Stocks in Bahia on 30 April 1933 amounted to 9 million pounds against 3 million on 30 April 1932.

Entries of cacao into the Ilheos and Rio de Contas zones were in September again satisfactory, being above the normal average for the month though showing a big reduction as compared with the exceptional entries for September 1932. The following are the data for September and the first five months of the season.

	September 1933	May-September 1933	September 1932	May-September 1932
Entries by rail :				
Ilheos zone (1000 lb.) . . .	9,855	38,011	17,858	46,972
Rio de Contas zone (1000 lb.)	992	5,343	2,646	6,614

Prospects for the main crop were reported to be satisfactory. Weather in September was favourable. Rainfall at Ilheos was 127 mm. (5 inches) against the average of 121 mm. (4.75 inches).

*Trinidad* : The rainy weather has had a deleterious effect on a considerable proportion of the young pods.

*French West Africa* : On the Ivory Coast production appears to be undergoing further development despite low prices. The area had already exceeded 100,000 acres in 1927 and 150,000 acres in 1932.

*Gold Coast and British Togoland* : *Major crop*. — Three months of heavy rains had by the end of August adversely affected the yield of the older trees in the south of the Central and Eastern Provinces, causing shedding of flowers and small pods. Pod diseases were more prevalent than normal and will further affect yields. The pods and beans were, however, considerably larger than last year. Young trees remained comparatively unaffected by the rainfall and bear a normal crop.

In the Eastern Province the crop was expected to extend into January and total yield to be less than last year, particularly in the Nsawam district and the Kibi, Anyinam, Tafo, Aburo and Krobo areas ; in Koforidua yields were reported to be better than those of last year. In the more southern areas of the Central Province the bulk of the crop was expected to ripen in October-November ; owing to the absence this year of the smaller pods on the trees, the total production was forecast as light ; in the north the crop was expected to be good but later than in the south. In the Western Province the crop was late but yields were forecast as a little above those of last year. Flowering had finished in Ashanti, where the crop was expected to extend into January, and, though in Bekwai a good crop was indicated, smaller yields than those of last year were forecast ; not much was expected to be sold before the beginning of October. In British Togoland an increase of 6.7 million pounds was expected from new areas.

Production estimates at the end of August were as follows in millions of pounds :

Eastern Province . . . . .	161
Trans-Volta . . . . .	3
Ashanti . . . . .	157
Central Province . . . . .	101
Western Province . . . . .	31
British Togoland . . . . .	26

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Total 1933-34 major crop . . . 479

The intensive picking that characterized the last main season was expected to be repeated this season. Marketings of the new main crop had been negligible and little crop movement before October was expected. Stocks of 1932-33 main crop cacao were estimated at 24 million pounds, of which the bulk was held at the ports. Most of this amount was expected to be exported by the end of September.

*Minor Crop.*— Practically the whole crop had ripened and been harvested by the end of August. Owing to the bad state of some of the bush trails some 5-10 % remained unsold and would no doubt be mixed with early main crop pods. Delayed ripening due to dull weather created an overlap with the main season. The size of the beans was, however, in most cases up to main crop standard.

Stocks of minor crop cacao on 1 September were estimated at about 10 million pounds.

*Crop Movement.*— At the end of August 500 million pounds of the 1932-33 main crop and 28 million pounds of minor crop had been shipped. Crop movement was unusually heavy for the month and new records were established for both rail and port movements. Exports by sea amounted to 50 million pounds in August while the total from 1 October to 31 August was 543 million pounds, both figures being records. Onloadings at Bekwai, Kumasi and Oda and offloadings at Takoradi were records for the month and for the cumulative period. Of the maritime exports in August the United States took 32 million pounds, bringing its total receipts for the period from 1 October 1932 to the record level of 163 million pounds.

The quality of the cacao exported in August showed a slight improvement over that of the previous month but was noticeably poor from the Central Province ports. Predominant defects for all ports were mould (6 %), slate 5.2 %, germination (4.8 %) and weevil (2.0 %), figures in brackets being the monthly weighted means.

August was abnormally wet all over the country. The incessant rains and dull weather delayed ripening and hindered drying and were expected to be reflected in the purity of the cacao bought during August and September.

Farmers were picking and fermenting in small quantities to obtain ready cash; this, coupled with the wet weather, was expected to impair quality, a particularly serious matter in view of the coming into force on 1 October 1933 of the United States prohibition of imports containing over 5 % mouldy beans or over 10 % mouldy and worm-eaten beans.

## Coffee.

*Haiti* : Picking of coffee berries was in progress during September in the Southern department. Yields were satisfactory.

*Mexico* : Crop condition of coffee has improved, thanks to rainfall towards the end of August.

*French West Africa* : Plantings on the Ivory Coast, the only colony of the group where the crop is grown on any considerable scale, this year occupy over 35,000 acres, an area almost the same as that of 1931, despite the reduction last year to 30,000 acres after it had risen from 12,000 acres in 1927 to 38,000 in 1931.

Plantings have also been considerable in Lower Guinea.

*Kenya* : The total area under coffee for the 1933-34 season is estimated at 102,000 acres as against 100,000 in 1932-33 and 93,000, the average for the preceding quinquennium. Percentages: 101.2 and 109.0. Forecast production is 277,000 centals as against 356,000 in 1932-33 and 241,000 on the average. Percentages: 77.7 and 114.9.

## Tea.

*India* : In the Northern districts the weather in September was on the whole not very favourable to growth and at times unduly wet and cold ; crop prospects were moderate. In the Southern districts weather was variable, heavy bursts of the southwest monsoon being interspersed with brighter intervals ; crop prospects were fair.

Up to the end of August there had been a decrease of 28  $\frac{1}{2}$  million pounds on the outturn up to the same date last year in North India, while outturn was 6.21 % behind that to the same date last year in South India.

## Colza and sesame.

*Austria* : According to the latest estimate production of colza is 40,800 centals (81,600 bushels) against 51,800 (103,600) in 1932 and 53,800 (107,600) on the average for 1927-31 (78.7 % and 75.8 %).

At the end of September, winter colza sowings had been nearly finished everywhere.

*Hungary* : Sowings of winter colza germinated uniformly. Toward 7 October development was good.

*Rumania* : According to the first estimate the area under colza this year is 96,100 acres against 112,700 in 1932 and 149,900 in 1927-31 (85.3 % and 64.1 %).

*Mexico* : Disease and excessive rains have caused serious damage to the sesame crops.

*India* : Weather during the sowing of sesame was not quite favourable but crop condition in the latter part of September was reported as on the whole fairly good.

*Palestine* : Production of sesame is very poor ; in most places it is a complete failure. Crop condition is poor.

*Syria and Lebanon* : The area under sesame is 8,600 acres against 5,800 in 1932 and 14,200 on the average for 1927-31 ; percentages : 148.0 and 61.1.

## Groundnuts.

*Argentina* : Groundnut production during the season 1932-33 is estimated at 1,726,000 centals compared with 1,293,000 in 1931-32 and 1,336,000 on the average for 1926-27 to 1930-31 ; percentages : 133.5 and 129.2.

*Mexico* : Crop condition of groundnuts is average owing to the damage caused by excessive rains.

*French West Africa* : Area under the crop appears to be extending.

In Senegal, which supplies about three-fifths of the production of French West Africa and where the area was drastically reduced in 1931, the area cultivated this year is larger than that of last year, which was 1,606,000 acres, and appears to be not much less than the exceptionally large figure of 1,740,000 acres cultivated in 1931 ; it is in any case much above the average of 1,451,000 acres cultivated in the period 1927-31.

The total amount of seed distributed exceeds 1,100,000 centals, the quantity supplied by the native credit societies being 8 % above that supplied by them last year. Sowings were carried out under good conditions.

The area cultivated in the Sudan, the second producer of the group, which exceeded 173,000 acres in 1927 and 1928 and 414,000 acres in 1932, has this year been further extended thanks to the popularity of the crop amongst the native populations due to its resistance to crickets and to the desire to increase food production.

In French Guinea the native credit societies, which commenced to function at the beginning of the year, were able immediately to meet to a certain extent the deficit in seed with the result that the area cultivated exceeds the 150,000 acres of last year.

In Dahomey and the Niger Territory, which produce groundnuts in the first place as a cash crop and where the decline in prices had led to a considerable regression, from 235,000 acres in 1931 to 77,000 acres in 1932 in Dahomey and from 124,000 acres in 1930 to 42,000 acres in 1931 and 35,000 acres in 1932 in Niger, the efforts of the administration have brought about a revival of the crop. Extension is particularly marked in Niger. In addition abundant precipitation allows good yields to be expected in Dahomey.

The total area under groundnuts this year in French West Africa as a whole thus appears to be a record, exceeding by from two to five hundred thousand acres those of 1932 (2,610,000 acres), 1931 (2,620,000) and 1930 (about 2,670,000 acres) and being certainly very much above the average of 1927-31 (2,330,000).

*Egypt*: The early groundnut crops are ripening; harvesting began towards the middle of October. Crop condition: 99 on 1 October against 98 on September and 100 on 1 October 1932.

## Jute.

*India*: In Bengal at the end of the first decade of October standing crops were reported to be in fair condition. In Bihar and Orissa the crop was doing well and harvesting and steeping was continuing in Bhagalpur.

## Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver. age				1932	Aver. age
	1,000 ounces			= 100	= 100	1,000 pounds			= 100	= 100
Bulgaria . . . . .	27	25	40	106.3	68.2	2,866	2,876	4,303	99.7	66.6
Spain . . . . .	...	...	24	...	...	1,014	...	1,727	...	58.7
Italy . . . . .	...	...	919	...	...	...	84,318	107,468	...	...
Korea s) . . . . .	220	227	203	96.9	108.1	30,016	29,272	24,778	102.5	121.1
Japan . . . . . { s)	2,864	2,748	2,679	104.2	106.9	414,215	383,535	421,892	108.0	98.2
{ f)	3,459	3,136	3,487	110.3	99.4	394,384	356,810	388,873	110.5	101.4
Syria and Lebanon	51	61	91	84.7	53.1	4,409	4,880	7,265	90.3	60.7

s) Spring cocoons. — f) Summer-autumn cocoons

## FODDER CROPS

*Germany* : Owing to the prolonged drought, sown fodder crops, as well as meadows and pastures, have suffered. As a consequence, a fodder shortage has been reported in some regions. Aftermath has, in general, been harvested rapidly; the results obtained, however, have not always been satisfactory as regards quantity.

According to the first estimate, production of mangolds this year is 619,440,000 centals (30,972,000 sh. tons) against 760,295,000 (38,014,000) in 1932 and 579,684,000 (28,984,000) on the average for 1927-1931; percentages: 81.5 and 106.9.

*Austria* : At the end of September growth of the various kinds of clover was satisfactory. The third cutting was generally harvested in good time. Cutting of clover sown on fallow land had also begun.

Yields of aftermath from permanent meadows were satisfactory. Rainy weather in the latter half of September was detrimental to the drying of the hay.

After the third cutting of temporary meadows, the grass continued to grow and promises good autumn grazing. During September it was possible fully to utilize common and alpine pastures.

*Irish Free State* : Continued drought, with only a comparatively small amount of rain during the month, has had the effect of drying pastures and checking full development of root crops. The effects so far, however, are not serious. Ample supplies of fodder of good quality and of other foods are available for all classes of stock. Pasturage however, is less succulent than is usual at this period of the year.

*France* : The rains at the end of September brought recovery of pastures but only very small benefit to aftermath of temporary meadows, of which the production was poor and to fodder roots, of which the yields are rather small. Production of fodder grain is on the whole poor, that of alfalfa is approximately average and that of purple clover very bad. Sowings of spring fodder were made in good conditions and seem to occupy a fairly large area, notably in the west.

*Great Britain and Northern Ireland* : In England and Wales the warm dry weather of August was continued during the first three weeks of September over the whole country. In the latter part of the month intermittent rains were general as a result of which there has been a remarkable recovery in the pastures and some improvement in the condition of the crops which had been adversely affected by the drought. Aftermaths have been very light and very few second cuts for hay have been attempted.

Pastures, which had become exceeding bare, have made a remarkable recovery though there is still room for improvement. Mangolds have been less adversely affected by the drought than turnips and swedes, but have not bulked well. The yield per acre is forecast at 16.2 long tons as against a ten years average of 18.9 tons. Turnips and swedes have suffered severely from drought and in many districts from the prevalence of mildew. The yield per acre is forecast at 10.1 tons as compared with a ten-year average of 12.6 tons.

In Scotland turnips and swedes are the worst crop of the year. There was little growth during September. Mildew, finger-and-toe and rotting are reported. Dry weather prevented growth. Mangolds have grown satisfactory and appear to have

been affected very little by the drought. The crop is, however, so small that the fact that the yield is generally expected to be fully up to the average will do little to make good the general shortage of turnips.

In Northern Ireland September weather was exceptionally dry and mostly mild with some ground frosts towards the end of the month. Mangolds made good progress.

### *The Condition of Fodder Crops.*

CROPS AND COUNTRIES	CROP CONDITION †)								
	1 October 1933			1 September 1933			1 October 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
<b>CLOVER:</b>									
Germany . . . . .	—	3.0	—	2.8	—	—	2.7	—	—
Austria 1) . . . . .	2.2	—	—	2.2	—	—	2.8	—	—
<b>ALFALFA:</b>									
Germany . . . . .	—	3.0	—	2.9	—	—	2.6	—	—
Austria . . . . .	2.4	—	—	2.2	—	—	—	—	3.2
<b>MANGOLDS:</b>									
Germany . . . . .	2.8	—	—	2.7	—	—	2.6	—	—
Austria . . . . .	2.5	—	—	2.2	—	—	2.9	—	—
Denmark:									
Jutland . . . . .	—	—	92	—	—	90	—	—	—
Islands . . . . .	—	—	91	—	—	90	—	—	—
Finland 2) . . . . .	—	—	85	—	—	77	—	—	—
<b>TEMPORARY MEADOWS:</b>									
Austria 3) . . . . .	2.3	—	—	2.1	—	—	—	3.0	—
Finland . . . . .	—	—	90	—	—	90	—	—	—
<b>PERMANENT MEADOWS:</b>									
Germany:									
irrigated meadows . . . . .	2.8	—	—	2.7	—	—	2.4	—	—
other meadows . . . . .	—	—	3.2	—	3.0	—	2.7	—	—
Austria . . . . .	2.3	—	—	2.2	—	—	2.9	—	—
Finland . . . . .	—	—	85	—	—	81	—	—	—
Sweden 4) . . . . .	—	—	2.5	—	—	2.5	—	3.0	—
<b>PASTURES:</b>									
Austria . . . . .	2.5	—	—	2.3	—	—	—	—	—
United States . . . . .	—	—	65.6	—	—	—	—	—	67.1

†) See explanation of the various systems on page 663 — a) Above the average. — b) Average. — c) Below the average. — 1) Red clover. — 2) Turnips. — 3) Klee-gras. — 4) Meadows for hay.

and appear in some areas to have withstood the drought better than any other field crop. The turnip crop, on the other hand, appears to have suffered severely except on heavy soil. In some areas growth practically ceased. Reports of early maturing were general and also of the presence of mildew on the foliage. Good supplies of good quality hay are available in most districts. Pastures generally were satisfactory during the month and were not affected by the prolonged drought as much as might have been expected.



Production of turnips and mangolds in England and Wales is estimated as follows :

	1933	1932	Average 1927-31	% 1933 1932 = 100	Av. 1933 = 100
Turnips (ooo centals) . . . . .	125,574	168,941	187,233	74.3	67.1
(ooo sh. tons) . . . . .	6,279	8,447	9,362		
Mangolds (ooo centals) . . . . .	86,374	97,126	120,333	88.2	71.8
(ooo sh. tons) . . . . .	4,319	4,856	6,017		

*Hungary* : Mangolds have grown well in the regions where the rains were sufficient. Towards 7 October harvesting began.

The last cutting of clover and alfalfa has given generally low yields. Production of clover and alfalfa seed was also poor. Production of the other temporary fodder crops was average. Production of aftermath from permanent meadows was generally very low. Pastures do not furnish adequate feed for livestock.

*Italy* : Due to the prolonged summer drought fodder crops gave poor yields during the first half of September and in some districts production was insufficient for the needs of the livestock. The rains in the latter half of the month favoured growth of meadows and pastures.

*Latvia* : Production of clover and sown grasses in 1933 was 35,543,000 centals (1,777,000 short tons) against 35,370,000 (1,768,000) in 1932 and 28,243,000 (1,412,000). on the average of the five years 1927-31 ; 100.5 % and 125.8 %.

According to the most recent estimates, production of hay from permanent meadows in 1933 was 41,776,000 centals (2,089,000 short tons), against 40,495,000 (2,025,000). in 1932 and 36,890,000 (1,844,000) on the average for the preceding quinquennium ; percentages : 103.2 and 113.2 %.

*Lithuania* : Weather conditions during September were fairly favourable for fodder crops.

Production of clover and other grasses in 1933 was 34,806,000 centals (1,740,000 short tons) against 36,349,000 (1,817,000) last year and 30,232,000 (1,512,000) on the average for the preceding five years : percentages : 95.8 % and 115.1 %.

*Norway* : In the following table are given the figures of area and production of the principal fodder crops in 1933, 1932 and 1927-31.

	1933	1932	Average 1927 to 1931	% 1933 1932 = 100	Average 1933 = 100
Hay from temporary meadows					
(ooo centals) . . . . .	38,939	45,001	41,506	86.5	93.8
(ooo sh. tons) . . . . .	1,947	2,250	2,075		
Hay from permanent meadows					
(ooo centals) . . . . .	7,114	9,082	11,141	78.3	63.9
(ooo sh. tons) . . . . .	356	454	557		
Turnips (ooo centals) . . . . .	9,876	13,962	10,523	70.7	93.8
(ooo sh. tons) . . . . .	494	698	526		
Kohl-rabi (ooo centals) . . . . .	3,226	3,847	2,405	83.9	134.1
(ooo sh. tons) . . . . .	161	192	120		

*Sweden* : Production of hay from temporary meadows is estimated at 88,406,000 centals (4,420,000 short tons) against 113,537,000 (5,677,000) in 1932 and 111,252,000 (5,563,000) on the average for 1927-1931; percentages: 77.9 and 79.5. Fodder roots and tubers: 54,256,000 (2,713,000) against 89,565,000 (4,478,000) and 66,689,000 (3,334,000); 60.6 % and 81.4 %.

*Argentina* (Telegram of 18 October): Pastures are in good condition.

*Canada* : Although the summer months were generally characterized by drought, timely rains fell in August and September and late sown crops did not suffer the great reduction in yield shown by grain crops. High yields were secured in Prince Edward Island, New Brunswick and Quebec while crops were light in Nova Scotia, Ontario and the Prairie Provinces. Yield per acre in Ontario was the lowest recorded since 1916 and yields in the Prairie Provinces were all below those of last year. In British Columbia the season was not as favourable as in 1932.

The latest estimates of area and production of fodder crops are as follows :

	1933	1932	Average 1927-31	1932 % 1933 = 100	Aver. = 100
<i>Area</i> (in thousand acres).					
Turnips . . . . .	180	175	196	103.0	91.7
Fodder maize . . . . .	359	366	420	98.2	85.6
Alfalfa . . . . .	694	666	773	104.2	89.8
<i>Production.</i>					
Turnips (ooo centals) . . . . .	31,478	37,766	37,511	83.4	83.9
(ooo sh. tons) . . . . .	1,574	1,888	1,876		
Fodder maize (ooo centals) . . . . .	56,520	57,152	67,582	98.9	83.6
(ooo sh. tons) . . . . .	2,826	2,858	3,379		
Alfalfa (ooo centals) . . . . .	35,400	35,270	36,119	100.4	98.0
(ooo sh. tons) . . . . .	1,770	1,763	1,806		

*United States* : The October estimates of tame hay and alfalfa production are rather higher than those of the preceding month; the figure for tame hay is now 1,346,740,000 centals (67,337,000 short tons) and that for alfalfa hay 499,040,000 (24,952,000).

*Algeria* : Pastures have suffered greatly from continued drought, scirocco and heat; towards the end of September, stubble land was nearly exhausted. The storms which fell in the latter half of the month, especially towards the end, and in the first week of September, were not abundant enough and too irregularly distributed to re-establish the pastures.

*Egypt* : Preparations for *versim* progressed well and sowing commenced at the beginning of September on small areas. Germination and growth are satisfactory.

## LIVESTOCK AND DERIVATIVES

### Cattle Population of the Netherlands.

In the following table are given the data for cattle in the Netherlands as enumerated on 1 July 1933, compared with those of the enumeration of June 1932 (which were limited to milch cows in calf) and of the June censuses of 1930, 1921 and 1910.

It should be noted that the data of the enumerations are not strictly comparable with those of the censuses, being carried out on a different basis.

The 1933 enumeration was made by the Crisis Rundvee Centrale, an organization for dealing with the depression in the cattle trade, and the Crisis Zuivel Centrale, a similar organization for the dairying industry, while the censuses were carried out by the Ministry of Agriculture.

Classification	1 July 1933	June 1932	June 1930	June 1921	June 1910
<i>Cattle</i> . . . . .	2,877,230	—	2,366,066	2,062,771	2,026,943
Bulls over 1 year . . . . .	39,832	—	26,453	25,785	23,309
Milch cows and cows in calf that have dropped their:					
first calf . . . . .	335,348	1,338,446	1,298,736	1,085,713	1,068,361
second calf . . . . .	283,594				
third calf . . . . .	258,492				
Milch cows and cows in calf that have dropped more than three calves . . . . .	574,877	—	419,417	371,436	389,339
Heifers in calf . . . . .	367,562				
Other females over 1 year . . . . .	244,097				
Steers under 1 year . . . . .	95,651	—	502,033	496,808	401,160
Females under 1 year . . . . .	516,391				
Calves for fattening . . . . .	50,909				
Oxen for fattening not otherwise indicated . . .	110,477	—	80,879	63,432	97,688

### Livestock in Poland.

In the following table are given the numbers of livestock in Poland during the last 5 years.

Year	Horses	Cattle	Sheep	Goats	Pigs
(thousand head)					
30 June 1933 . . . . .	3,771	8,982	2,556	278	5,748
30 " 1932 . . . . .	3,940	9,461	2,488	247	5,844
30 " 1931 . . . . .	4,124	9,786	2,599	237	7,321
30 " 1930 . . . . .	4,103	9,400	2,492	227	6,047
30 " 1929 . . . . .	4,047	9,057	2,523		4,829

During the five-year period taken into consideration in the above table, maxima were attained for all kinds of livestock in 1931. In 1932, the number decreased compared with the preceding year for all kinds, with the exception of goats for which, on the contrary, there was a slight increase. In 1933, the number of goats increased compared with 1932 by 12.1 % and that of sheep by 2.7 %; for all other kinds there was, on the contrary, a decrease of 1.5 % for pigs, 4.3 % for horses and of 5.1 % for cattle.

Examining the different classes for each kind of livestock, it is noted, for 1933 compared with 1932 that, for horses, the largest decrease took place for animals of 2 to 3 years, owing to the considerable decrease in colts in 1932. The decrease in cattle is to be attributed to the diminution in the number of calves up to one year old, which is moreover, smaller than in 1932 and to the fall in the number of young cattle of 2 to 3 years, as a result of the considerable decrease in the number of calves in 1932; a considerable decrease has also taken place in the group 3 years old and over. The number of pigs also shows a certain reduction, due largely to the decrease in the number of pigs over 6 months old.

The number of pigs under 6 months old, shows some increase. All classes of sheep and goats have increased in number.

### Livestock in Czechoslovakia.

The following table gives the final results of the pig census in 1933, making small changes in the preliminary figures published in our August Crop Report :

#### *Numbers of pigs*

(Head).

Classification	1-VII-1933	1-VII-1932	Increase (+) or decrease (—) (1932 = 100)
Boars for reproduction . . . . .	13,949	12,687	+ 9.9
Sows for reproduction (excluding those for fattening) . . . . .	523,281	460,984	+ 13.5
of which :			
from 6 months to 1 year . . . . .	183,700	149,885	+ 22.6
1 year old and over . . . . .	339,581	311,099	+ 9.2
Other pigs (including sows for fattening) . .	2,776,893	2,608,785	+ 6.4
of which :			
pigs up 8 weeks old . . . . .	845,625	770,354	+ 9.8
pigs from 8 weeks to 6 months old . .	1,574,623	1,431,531	+ 10.0
pigs 6 months old and over . . . . .	356,645	406,900	— 12.4
Total . . .	<u>3,314,123</u>	<u>3,082,456</u>	<u>+ 7.5</u>

### Livestock in Guatemala.

In the following table are given the numbers of livestock in Guatemala in 1932 compared with the figures for 1931 and 1930.

Classification	Estimate 1932	Estimate 1931	Census 1930
<i>Horses</i> . . . . .	65,136	56,523	63,117
of which :			
Pure breeds { Male . . . . .	144	—	—
{ Female . . . . .	150	—	—
Native breeds { Male . . . . .	34,709	—	—
{ Female . . . . .	30,133	—	—
<i>Asses and mules</i> . . . . .	30,996	34,065	37,049
of which :			
Pure breeds { Male . . . . .	281	—	—
{ Female . . . . .	330	—	—
Native breeds { Male . . . . .	14,120	—	—
{ Female . . . . .	16,265	—	—
<i>Cattle</i> . . . . .	369,253	387,407	416,397
of which :			
Pure breeds { Male . . . . .	2,371	—	—
{ Female . . . . .	3,793	—	—
Native breeds { Male . . . . .	150,560	—	—
{ Female . . . . .	212,529	—	—
<i>Sheep</i> . . . . .	165,631	146,789	183,537
of which :			
Pure breeds { Male . . . . .	59	—	—
{ Female . . . . .	164	—	—
Native breeds { Male . . . . .	45,234	—	—
{ Female . . . . .	120,174	—	—
<i>Goats</i> . . . . .	17,945	16,206	21,413
of which :			
Male . . . . .	6,428	—	—
Female . . . . .	11,517	—	—
<i>Pigs</i> . . . . .	89,416	87,491	79,251
of which :			
Male . . . . .	43,421	—	—
Female . . . . .	45,995	—	—

This table shows that, save for horses and pigs, there has been decrease in 1932, particularly noticeable for cattle.

### Livestock in Haiti.

In the following table are given the numbers of livestock in Haiti during the last five years.

Classification	1932	1931	1930	1929	1928
Horses . . . . .	400,000	350,000	310,000	280,000	250,000
Cattle . . . . .	100,000	92,000	90,000	80,000	75,000
Sheep . . . . .	15,000	12,000	10,000	8,000	5,000
Goats . . . . .	300,000	280,000	260,000	240,000	220,000
Asses . . . . .	600,000	400,000	380,000	340,000	340,000
Mules . . . . .	60,000	60,000	58,000	55,000	50,000
Pigs . . . . .	250,000	260,000	240,000	220,000	200,000

Save for pigs 1932 shows a distinct increase for all species over the record figures of 1931.

### Livestock in Egypt 1).

Years	Cattle	Horses	Asses	Mules	Sheep	Goats	Pigs	Buffaloes	Camels
1933 2) . . . . .	912,018	33,998	753,346	18,789	1,344,681	679,749	13,205	856,610	153,898
1932 3) . . . . .	908,911	34,243	794,567	18,438	1,344,287	664,113	11,403	882,465	155,811
1931 4) . . . . .	792,103	35,714	741,222	20,527	1,239,111	636,028	18,404	821,835	162,470
1930 4) . . . . .	776,008	35,866	763,321	21,105	1,129,033	643,916	17,651	795,546	166,297
1929 4) . . . . .	800,853	38,369	759,097	21,743	1,002,596	731,081	12,630	822,594	172,385
1928 4) . . . . .	791,757	35,768	761,790	23,392	1,179,538	548,493	14,840	788,491	180,470
1927 4) . . . . .	739,524	37,651	750,031	21,153	1,232,220	622,339	20,854	757,901	179,141
1926 4) . . . . .	721,738	36,467	738,662	22,858	1,143,554	529,972	16,677	763,134	171,093
1925 4) . . . . .	676,994	34,019	709,789	21,480	1,091,016	455,054	13,255	722,943	159,345
1924 4) . . . . .	689,237	37,421	715,255	22,410	1,084,703	454,640	13,053	727,027	151,197

1) Excluding animals belonging to the British forces. — 2) Census taken in January. — 3) Census taken in February.  
— 4) Census taken in September.

### Stock slaughtered in New Zealand.

The following are the numbers of stock slaughtered at abattoirs, meat-export works, bacon-factories and ordinary registered slaughterhouses throughout the Dominion during the year ended 31 March 1933 in comparison with the corresponding numbers for the preceding four years. These figures do not include stock slaughtered on farms.

	Cattle	Calves	Sheep	Lambs	Suine
1932-33 . . . . .	393,608	599,335	3,569,598	9,718,585	532,123
1931-32 . . . . .	322,942	593,029	4,464,894	8,689,196	430,914
1930-31 . . . . .	326,136	551,762	3,563,952	8,092,795	450,490
1929-30 . . . . .	362,968	440,374	3,420,282	6,594,635	485,907
1928-29 . . . . .	403,330	394,987	2,980,066	6,149,482	470,493

## Current information on livestock and derivatives.

*Irish Free State* : Milk production shows some reduction as the result of the dry season.

*France* : Owing to the drought, which persisted up to the end of September and the resulting shortage of grass, the condition of livestock is mediocre. Many animals have been sold young or half-fattened for slaughter.

Dairy production is small. Owing to the poor production of fodder and roots, which has already, in some cases, been used to supplement grazing, winter supplies appear to be quite insufficient.

*Great Britain and Northern Ireland* : In England and Wales the drought has made it impossible to maintain milk yields at their normal level even when hand-feeding has been resorted to.

Scotland the calm, dry, bright weather that was general throughout most of the month, with moderate temperatures enabled livestock of all classes to make satisfactory progress, despite the rather bare condition of the pastures. Water was scarce on many farms. Feeding cattle made good progress generally although they did not thrive so well as they did during August and, where water was short, they were reported to be in only fair condition; some will be marketed unfinished. Dairy cows on some farms are perhaps not in as good condition as is usual at this season and the milk yield has fallen off slightly, but, where necessary, extra hand-feeding has been provided. Sheep made satisfactory progress and conditions were suitable for fattening lambs.

In Northern Ireland store cattle have thriven well and were in good condition and normal health at the end of September. Although the night temperature was low, the ground was dry and suitable for outliers. Dairy stock also maintained good condition and health throughout the month. The quantity of milk decreased considerably towards the end of the month and was generally a little below the average for the time of year. All classes of sheep were in good condition at the end of the month with the exception of mountain ewes and lambs, which were showing the effects of the scarcity of pasture.

*Argentina* (Telegram of 18 October) : Health is excellent.

*United States* : Developments in the cattle feeding situation to the end of September, the short maize crop and high feed prices relative to fat cattle prices, pointed to a relatively small volume of cattle feeding in the winter of 1933-34 both in the Corn Belt and in most other important feeding States.

The movement of feeder lambs into the Corn Belt States to the end of September and reports as to probable feeding activities in the Western States indicate that the number of lambs to be fed this fall and winter will be somewhat smaller than during the feeding season of 1932-33.

*Algeria* : In the first decade of October stock were suffering from scarcity of feed and insufficiency of water following on the drought, which was interrupted only by a few showers. Young animals naturally suffered especially. Good rains would still, however, suffice for recovery.

Health was fairly good on the whole, though aphtic fever continued to be prevalent in some parts of the west and east and many milk cows suffer from piroplasmosis.

*Union of South Africa*: With the exception of the Southwestern and West Coast districts of the Cape Province droughty conditions continued throughout the Union until the end of August, when showers fell in many of the inland areas of the Cape and Northern Provinces.

It is doubtful, however, if the rainfall was sufficient to afford much relief in most areas owing to the parched condition of the veld. Nevertheless, general conditions definitely improved along the South Coast and in many of the Karroo districts.

The serious plight of agriculture remained unrelieved over the inland districts of the Cape Northwest, in Bechuanaland and the Transvaal and Orange Free State. Even in Natal farmers were concerned as to the future and it was expected that unless there were general rains during September there would be a serious shortage of feed and water for stock.

### LATEST NEWS.

*India* (Telegram of 26 October): The second estimate of area under sugar-cane is 3,349,000 acres, an increase of 11.7 % on the second estimate of 1932-33 (2,998,000) and of 23.5 % on the average of the corresponding estimates in the five years ending 1931-32 (2,711,000).

The second estimate of area under groundnuts is 5,670,000 acres, against the corresponding estimate of 5,000,000 in 1932-33, an increase of 13.4 %, and the five-year average of 4,362,000 acres, an increase of 30.0 %.

*Java and Madura*: The following estimates have been received from the Government:

	1933	1932	Average 1927 to 1931	% 1932 100	% 1933 Average 100
Area (Thousand acres)					
Rice, irrigated . . . . .	8,164	8,062	7,557	101.3	108.0
Rice, unirrigated . . . . .	1,105	1,056	1,124	104.6	98.3
Maize . . . . .	5,125	4,946	4,663	103.6	109.9
Potatoes . . . . .	42	59	49	70.9	85.1
Groundnuts . . . . .	526	530	527	99.3	99.9
Production (ooo omitted)					
Rice, irrigated:					
Centals . . . . .	111,775	113,832	107,074	98.2	104.4
Bushels . . . . .	248,383	252,956	237,937		
Rice, unirrigated:					
Centals . . . . .	8,763	8,983	9,488	97.6	92.4
Bushels . . . . .	19,474	19,963	21,084		
Maize:					
Centals . . . . .	45,636	41,939	41,745	108.8	109.3
Bushels . . . . .	81,493	74,891	74,545		
Potatoes:					
Centals . . . . .	1,543	2,553	1,942	60.4	79.5
Bushels . . . . .	2,572	4,255	3,236		
Groundnuts (shelled):					
Centals . . . . .	3,527	3,560	3,426	99.1	103.0



# TRADE

COUNTRIES	AUGUST				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	159	101	0	0	1,808	5,688	0	0	—	—
Hungary . . . . .	937	395	0	0	3,254	7,912	2	0	—	—
Lithuania . . . . .	0	0	0	0	2	20	0	0	—	—
Poland . . . . .	31	7	0	0	855	1,598	483	346	—	—
Rumania . . . . .	...	...	...	...	24	21,200	9	9	—	—
Yugoslavia . . . . .	35	126	0	0	503	8,796	0	0	—	—
U. S. S. R. . . . .	...	...	...	...	a) 10,862	a) 39,820	a) 1,373	a) 1,257	—	—
Canada . . . . .	5,192	10,975	2	...	144,086	109,685	31	75	—	—
United States . . . . .	13	2,339	591	298	11,502	52,805	5,582	7,361	—	—
Argentina . . . . .	9,764	2,277	—	—	76,302	82,114	—	—	—	—
Chile . . . . .	...	...	...	...	9	9	858	—	—	—
Turkey . . . . .	97	2	0	0	260	913	0	0	—	—
Algeria . . . . .	756	1,369	20	62	5,331	4,837	908	1,462	—	—
French Morocco . . . . .	448	20	0	7	3,503	4,762	35	90	—	—
Tunis . . . . .	...	...	...	...	3,389	5,337	344	401	—	—
Australia . . . . .	3,664	1,318	0	0	72,197	73,793	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	814	888	1,356	2,172	12,540	7,313	18,433	21,006	—	—
Austria . . . . .	0	0	492	348	0	0	7,180	6,415	—	—
Belgium . . . . .	112	216	2,436	1,964	2,163	3,587	25,704	31,550	—	—
Denmark . . . . .	0	0	734	869	15	9	6,202	8,719	—	—
Spain . . . . .	0	0	0	0	0	0	0	6,484	—	—
Estonia . . . . .	0	0	0	0	0	0	0	256	—	—
Irish Free State . . . . .	0	0	926	518	40	13	8,373	6,369	—	—
Finland . . . . .	0	0	148	77	0	0	922	428	—	—
France . . . . .	214	0	1,706	6,521	49	9	24,571	52,259	—	—
Gr. Brit. and N. Irel. . . . .	60	46	9,198	10,320	553	1,206	122,626	137,664	—	—
Greece . . . . .	0	0	805	1,016	0	0	11,790	14,116	—	—
Italy . . . . .	0	0	549	648	13	18	11,188	22,573	—	—
Latvia . . . . .	0	0	0	11	2	0	18	575	—	—
Norway . . . . .	0	0	300	143	0	0	3,552	3,294	—	—
Netherlands . . . . .	2	4	1,462	1,270	514	110	15,622	17,875	—	—
Portugal . . . . .	—	—	...	...	—	—	505	1,393	—	—
Sweden . . . . .	0	0	97	509	13	9	1,940	4,054	—	—
Switzerland . . . . .	4	4	933	1,093	15	18	11,473	12,683	—	—
Czechoslovakia . . . . .	0	0	79	225	2	4	6,594	13,199	—	—
China . . . . .	...	...	...	...	0	...	26,890	...	—	—
India . . . . .	2	2	0	0	46	183	1,060	179	—	—
Japan . . . . .	—	—	679	401	—	—	11,667	17,070	—	—
Syria and Lebanon . . . . .	...	...	...	...	278	511	254	328	—	—
Egypt . . . . .	...	...	...	...	9	2	4	994	—	—
Union of South Africa . . . . .	...	...	...	...	0	2	161	1,034	—	—
New Zealand . . . . .	...	...	...	...	a) 423	a) 730	a) 99	99	—	—
Totals . . . . .	23,304	20,089	22,513	28,479	g) 350,562	432,283	g) 300,194	391,617	—	—
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	4	9	0	0	66	990	0	0	—	—
Hungary . . . . .	445	110	0	0	1,651	1,486	0	0	—	—
Lithuania . . . . .	0	2	0	0	35	9	0	2	—	—
Poland . . . . .	344	421	0	0	6,572	2,513	216	123	—	—
Rumania . . . . .	...	...	...	...	9	1,678	0	0	—	—
U. S. S. R. . . . .	...	...	...	...	a) 5,199	a) 23,638	—	—	—	—
Canada . . . . .	90	668	0	...	1,605	5,066	0	0	—	—
United States . . . . .	2	0	—	—	33	622	—	—	—	—
Argentina . . . . .	893	68	—	—	3,203	5,097	—	—	—	—
Turkey . . . . .	62	26	0	0	348	690	0	0	—	—
Algeria . . . . .	2	7	0	0	24	29	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	538	428	1,422	1,332	2,978	2,046	7,390	12,103	—	—
Austria . . . . .	0	0	2	75	0	0	496	1,726	—	—
Belgium . . . . .	0	66	280	218	368	639	2,463	2,709	—	—
Denmark . . . . .	0	0	657	721	0	0	5,776	4,731	—	—
Finland . . . . .	0	0	179	143	0	0	1,426	1,202	—	—
France . . . . .	0	0	22	121	0	0	465	1,735	—	—
Italy . . . . .	0	0	0	15	0	0	265	137	—	—
Latvia . . . . .	0	0	0	0	0	0	0	99	—	—
Norway . . . . .	0	0	196	49	0	0	2,943	3,415	—	—
Netherlands . . . . .	4	7	582	516	75	331	4,330	4,176	—	—
Sweden . . . . .	0	0	9	218	15	26	271	1,334	—	—
Switzerland . . . . .	0	0	4	26	0	0	324	108	—	—
Czechoslovakia . . . . .	11	2	0	64	66	7	99	5,124	—	—
Totals . . . . .	2,395	1,814	3,353	3,498	22,247	44,867	26,464	38,757	—	—

COUNTRIES	AUGUST				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	271	0	7	7	2,229	64	68	229	—	—
Belgium . . . . .	4	4	11	13	53	73	66	51	—	—
Bulgaria . . . . .	4	13	0	0	55	752	0	0	—	—
Spain . . . . .	2	0	0	0	9	18	0	0	—	—
France . . . . .	463	119	73	46	4,162	4,764	529	262	—	—
Hungary . . . . .	110	64	0	0	864	2,130	0	0	—	—
Italy . . . . .	183	485	33	18	3,695	2,235	304	287	—	—
Lithuania . . . . .	4	2	0	0	26	26	0	0	—	—
Poland . . . . .	2	13	0	0	234	511	0	4	—	—
Rumania . . . . .	...	...	...	...	13	855	2	0	—	—
Yugoslavia . . . . .	2	4	...	...	57	104	0	0	—	—
Canada . . . . .	941	648	13	2	9,566	10,551	49	40	—	—
United States . . . . .	708	814	0	0	8,470	15,091	2	0	—	—
Argentina . . . . .	97	62	—	—	1,620	1,548	—	0	—	—
Chile . . . . .	...	...	...	...	4	26	476	0	—	—
India . . . . .	20	42	0	0	340	836	2	0	—	—
Turkey . . . . .	586	320	2	0	6,094	3,470	15	106	—	—
Japan . . . . .	0	0	0	0	0	11	0	4	—	—
Algeria . . . . .	62	40	4	2	520	157	71	57	—	—
Tunis . . . . .	...	...	...	...	172	146	55	20	—	—
Australia . . . . .	838	697	0	0	12,553	13,995	0	0	—	—
<i>Importing Countries:</i>										
Austria . . . . .	0	0	24	46	2	7	578	1,261	—	—
Denmark . . . . .	4	2	68	75	18	13	794	1,290	—	—
Estonia . . . . .	0	0	0	0	0	9	0	15	—	—
Irish Free State . . . . .	0	0	231	368	2	26	1,797	4,050	—	—
Finland . . . . .	0	0	104	117	0	0	1,239	1,596	—	—
Gr. Brit. and N. Irel. . . . .	366	489	1,171	758	4,200	5,628	9,495	11,224	—	—
Greece . . . . .	0	0	0	4	0	0	22	66	—	—
Norway . . . . .	0	0	53	68	4	9	1,135	1,358	—	—
Netherlands . . . . .	0	9	108	64	24	71	933	723	—	—
Portugal . . . . .	—	—	...	...	—	—	218	201	—	—
Sweden . . . . .	—	—	...	...	0	0	9	37	—	—
Czechoslovakia . . . . .	0	0	9	49	7	9	437	1,182	—	—
Ceylon . . . . .	—	—	26	33	—	—	384	401	—	—
China . . . . .	...	...	...	...	1,193	...	5,741	...	—	—
Java and Madura . . . . .	—	—	...	...	—	—	957	1,144	—	—
Indo-China . . . . .	—	—	...	...	—	—	342	388	—	—
Syria and Lebanon . . . . .	...	...	...	...	99	93	802	397	—	—
Egypt . . . . .	...	...	...	...	2	0	205	2,430	—	—
French Morocco . . . . .	0	0	0	9	18	154	84	62	—	—
Union of South Africa . . . . .	...	...	...	...	2	2	7	15	—	—
New Zealand . . . . .	...	...	...	...	2	2	229	214	—	—
Totals . . . . .	4,667	3,827	1,937	1,681	55,116	63,386	21,306	24,114	—	—
<b>Barley. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	84	20	0	0	172	406	0	0	—	—
Spain . . . . .	11	0	0	0	53	15	0	0	—	—
Hungary . . . . .	150	11	0	0	1,504	55	0	7	—	—
Poland . . . . .	71	101	0	0	3,558	3,146	0	0	—	—
Rumania . . . . .	...	...	...	...	11,771	15,913	0	0	—	—
Czechoslovakia . . . . .	9	130	0	0	3,516	2,112	2	2	—	—
U. S. S. R. . . . .	...	...	...	...	7,665	17,789	—	—	—	—
Canada . . . . .	29	743	0	0	2,588	6,499	0	0	—	—
United States . . . . .	207	456	—	—	4,398	2,524	—	—	—	—
Argentina . . . . .	428	18	—	—	8,774	6,418	—	—	—	—
Chile . . . . .	...	...	...	...	439	492	0	0	—	—
India . . . . .	0	2	18	0	4	666	20	0	—	—
Syria and Lebanon . . . . .	...	...	...	...	33	384	337	104	—	—
Turkey . . . . .	185	154	0	0	990	2,996	0	0	—	—
Egypt . . . . .	...	...	...	...	152	2	0	271	—	—
French Morocco . . . . .	569	509	—	—	3,594	—	—	—	—	—
Tunis . . . . .	...	...	...	...	2,758	820	40	556	—	—
Australia . . . . .	267	7	0	0	1,420	1,614	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	0	0	342	344	4	18	3,763	15,970	—	—
Austria . . . . .	0	0	106	117	0	0	1,982	2,075	—	—
Belgium . . . . .	49	139	941	538	1,400	1,676	9,085	9,396	—	—
Denmark . . . . .	0	4	117	163	461	474	2,231	3,331	—	—
Irish Free State . . . . .	0	0	66	0	2	26	139	483	—	—
France . . . . .	0	0	461	622	4	15	7,641	9,482	—	—
Gr. Brit. and N. Irel. . . . .	4	7	1,034	853	40	31	13,558	14,039	—	—
Greece . . . . .	0	0	0	0	0	0	20	172	—	—
Italy . . . . .	0	0	31	24	0	0	957	800	—	—
Norway . . . . .	0	0	9	0	0	0	159	794	—	—
Netherlands . . . . .	0	0	1,001	547	112	262	8,810	9,112	—	—
Switzerland . . . . .	0	0	35	159	0	2	4,268	2,989	—	—
Yugoslavia . . . . .	37	0	0	0	95	13	4	37	—	—
Algeria . . . . .	168	26	143	351	159	620	2,017	2,520	—	—
Totals . . . . .	2,268	2,327	4,304	3,718	52,072	64,988	55,033	72,140	—	—

COUNTRIES	AUGUST				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	2	2	0	0	55	73	9	218	—	—
Hungary . . . . .	95	0	0	0	465	7	0	2	—	—
Lithuania . . . . .	0	0	0	0	0	20	0	0	—	—
Poland . . . . .	13	2	0	0	306	62	0	0	—	—
Rumania . . . . .	...	...	...	...	639	293	0	0	—	—
Czechoslovakia . .	73	104	0	0	3,038	884	0	57	—	—
Yugoslavia . . . .	0	0	0	0	0	2	0	0	—	—
Canada . . . . .	82	271	0	108	3,766	4,628	683	655	—	—
United States . . .	46	357	2	0	1,217	897	29	22	—	—
Argentina . . . . .	769	690	—	—	10,384	16,486	—	—	—	—
Chile . . . . .	...	...	...	...	227	282	0	0	—	—
Algeria . . . . .	7	13	7	9	130	295	57	384	—	—
Tunis . . . . .	...	...	...	...	126	212	0	0	—	—
Australia . . . . .	4	18	0	0	93	108	2	2	—	—
<i>Importing Countries:</i>										
Germany . . . . .	57	0	35	4	234	9	423	223	—	—
Austria . . . . .	0	0	49	71	0	0	639	1,464	—	—
Belgium . . . . .	0	2	13	71	7	37	877	1,504	—	—
Denmark . . . . .	7	0	53	9	71	66	375	500	—	—
Estonia . . . . .	0	0	0	0	0	0	0	7	—	—
Finland . . . . .	0	0	35	9	2	20	163	55	—	—
France . . . . .	0	0	40	320	4	7	1,155	3,214	—	—
Gr. Brit. and N. Irel.	2	0	331	600	24	203	6,347	8,494	—	—
Italy . . . . .	0	0	71	64	0	0	2,683	4,074	—	—
Latvia . . . . .	0	0	0	0	11	0	0	7	—	—
Norway . . . . .	0	0	0	7	2	2	13	273	—	—
Netherlands . . . .	0	0	165	165	26	44	2,610	2,383	—	—
Sweden . . . . .	0	7	46	86	46	181	580	1,105	—	—
Switzerland . . . .	0	0	187	258	0	2	4,899	5,033	—	—
<b>Totals . . .</b>	<b>1,157</b>	<b>1,466</b>	<b>1,034</b>	<b>1,781</b>	<b>20,873</b>	<b>24,820</b>	<b>21,544</b>	<b>29,676</b>	<b>—</b>	<b>—</b>

**Maize. — Thousand cents (1 cental = 100 lb.).**

COUNTRIES					TEN MONTHS (November 1-August 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<i>Exporting Countries:</i>										
Bulgaria . . . . .	79	90	0	0	3,139	2,524	0	0	2,890	0
Rumania . . . . .	...	...	...	...	32,064	28,501	0	2	34,421	2
Yugoslavia . . . . .	1,060	366	0	0	11,909	1,550	0	26	1,825	26
United States . . .	223	7	7	9	3,360	1,896	79	198	3,084	220
Argentina . . . . .	10,838	14,242	—	—	83,805	154,860	—	—	176,057	—
Brazil . . . . .	...	...	...	...	0	0	—	—	2	—
Java and Madura . .	18	93	—	—	1,446	2,291	—	—	2,436	—
Indo-China . . . .	...	...	...	...	3,508	1,731	—	—	3,459	—
Syria and Lebanon .	...	...	...	...	4	7	227	33	7	37
Turkey . . . . .	53	15	0	0	265	328	0	0	373	0
Egypt . . . . .	...	...	...	...	207	9	4	40	15	46
Union of South Afr.	0	525	0	0	3,510	2,427	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	456	1,310	0	0	5,467	14,989	0	17,007
Austria . . . . .	0	0	1,149	432	0	0	10,060	6,601	0	7,628
Belgium . . . . .	93	42	1,528	1,883	924	1,213	15,049	16,032	1,385	18,700
Denmark . . . . .	0	0	866	1,920	0	0	12,573	19,634	0	21,231
Spain . . . . .	0	0	289	293	0	0	1,770	5,953	0	6,931
Irish Free State . .	0	0	992	1,248	0	0	6,078	11,383	0	13,658
Finland . . . . .	0	0	229	115	0	0	1,023	450	0	582
France . . . . .	0	2	1,151	3,181	2	26	14,224	20,739	26	25,869
Gr. Brit. and N. Irel.	198	322	5,203	5,908	1,559	2,734	48,087	52,468	3,208	64,058
Greece . . . . .	0	0	7	22	0	0	604	3,360	0	3,382
Hungary . . . . .	518	0	0	220	4,277	62	0	873	93	939
Italy . . . . .	137	0	209	1,437	1,905	4	1,768	14,917	7	15,737
Norway . . . . .	0	0	337	604	0	0	2,932	3,519	0	4,092
Netherlands . . . .	2	11	2,621	2,923	73	198	27,697	31,628	223	36,892
Poland . . . . .	0	0	4	13	0	0	77	108	0	126
Portugal . . . . .	—	—	...	...	—	—	992	974	—	1,407
Sweden . . . . .	0	0	719	736	0	0	4,548	5,384	0	6,135
Switzerland . . . .	0	0	121	430	0	2	1,678	2,943	2	3,717
Czechoslovakia . .	0	0	600	388	0	0	3,053	9,493	0	9,958
Canada . . . . .	0	4	240	154	20	13	3,794	3,283	13	3,891
Japan . . . . .	—	—	0	0	—	—	42	1,693	—	1,695
Tunis . . . . .	...	...	...	...	0	0	0	322	0	324
<b>Totals . . .</b>	<b>13,219</b>	<b>15,712</b>	<b>16,728</b>	<b>23,226</b>	<b>151,977</b>	<b>200,376</b>	<b>161,826</b>	<b>227,045</b>	<b>234,517</b>	<b>264,290</b>

1) See notes page 742.

COUNTRIES	AUGUST				EIGHT MONTHS (January 1-August 31)				TWELVE MONTHS (January 1-DEC. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	66	44	0	0	163	551	0	0	871	0
Italy . . . . .	181	137	7	9	2,745	2,224	97	40	3,505	55
United States . . . . .	75	134	33	2	1,067	1,929	205	130	2,586	190
Brazil . . . . .	...	...	—	—	x) 262	x) 520	—	—	615	—
India . . . . .	3,567	2,842	7	26	33,083	37,997	291	463	48,001	683
Indo-China . . . . .	...	...	—	—	x) 19,842	x) 16,751	—	—	26,983	—
Siam . . . . .	3,214	3,084	—	—	24,948	22,461	—	—	34,106	—
Egypt . . . . .	...	...	...	...	x) 1,272	x) 168	x) 7	x) 708	1,032	210
<i>Importing Countries:</i>										
Germany . . . . .	86	115	827	708	626	750	5,038	5,227	1,047	8,481
Austria . . . . .	0	0	42	55	0	0	408	355	0	549
Belgium . . . . .	7	20	172	108	51	157	886	822	201	1,213
Denmark . . . . .	0	0	13	13	0	0	108	75	0	139
Estonia . . . . .	—	—	0	0	—	—	9	11	—	15
Irish Free State . . . . .	0	0	7	2	0	0	40	37	2	46
France . . . . .	29	57	1,193	787	595	540	8,120	5,326	860	8,327
Gr. Brit. and N. Irel. . . . .	29	9	203	174	99	130	1,737	1,753	163	2,747
Greece . . . . .	—	—	42	31	—	—	315	353	—	540
Hungary . . . . .	0	0	40	26	0	0	315	262	0	465
Latvia . . . . .	0	0	4	2	0	0	24	9	0	18
Lithuania . . . . .	0	0	2	2	0	0	11	11	0	20
Norway . . . . .	0	0	7	7	0	0	62	51	0	71
Netherlands . . . . .	108	132	174	55	884	1,098	2,815	1,684	1,854	2,639
Poland . . . . .	13	22	205	231	95	236	1,193	1,025	517	1,027
Portugal . . . . .	—	—	...	...	—	—	x) 441	x) 589	—	875
Sweden . . . . .	—	—	0	0	—	—	104	90	—	90
Switzerland . . . . .	0	0	24	22	0	0	417	249	0	432
Czechoslovakia . . . . .	0	0	101	112	0	0	849	736	0	1,096
Yugoslavia . . . . .	0	0	26	51	0	2	337	320	2	494
Canada . . . . .	4	0	62	15	13	9	509	498	9	593
Chile . . . . .	—	—	...	...	—	—	x) 95	x) 146	—	187
Ceylon . . . . .	0	0	1,032	1,008	2	2	6,918	7,416	4	10,384
China . . . . .	...	...	...	...	x) 24	x) 33	x) 20,424	x) 20,468	49	29,970
Java and Madura . . . . .	44	0	...	...	93	24	x) 2,339	x) 2,183	71	3,303
Japan . . . . .	7	9	284	249	302	628	2,116	2,295	1,034	3,369
Syria and Lebanon . . . . .	...	...	...	...	x) 0	x) 0	x) 254	x) 205	0	392
Turkey . . . . .	0	0	26	7	0	0	49	60	0	93
Algeria . . . . .	0	0	9	7	15	9	157	137	9	196
Tunis . . . . .	...	...	...	...	x) 0	x) 0	x) 18	x) 29	0	40
Union of South Africa . . . . .	...	...	...	...	x) 0	x) 0	x) 582	x) 489	0	895
Australia . . . . .	24	7	7	0	119	62	33	33	86	49
New Zealand . . . . .	...	...	...	...	x) 0	x) 0	x) 46	x) 40	0	64
Totals . . . . .	7,454	6,612	4,549	3,709	86,300	86,281	57,369	54,325	123,407	80,457

<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	0	0	0	2	15	0	2	4
Lithuania . . . . .	2	4	0	0	51	108	0	0	170	0
Argentina . . . . .	2,037	3,435	—	—	22,979	29,767	—	—	44,540	—
India . . . . .	1,078	112	0	0	3,250	1,124	0	0	1,728	0
Tunis . . . . .	...	...	...	...	x) 2	x) 9	x) 0	x) 0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	0	2	403	1,008	29	11	6,019	6,279	20	9,841
Belgium . . . . .	4	2	181	278	46	117	2,161	2,262	139	3,671
Denmark . . . . .	—	—	40	64	—	—	346	348	—	534
Spain . . . . .	—	—	35	35	—	—	220	344	—	494
Finland . . . . .	0	0	4	4	0	0	57	33	0	75
France . . . . .	0	0	496	463	4	4	4,063	3,349	7	5,187
Gr. Brit. and N. Irel. . . . .	0	2	397	822	4	2	3,669	5,456	4	8,162
Greece . . . . .	0	0	15	4	0	0	79	44	0	88
Hungary . . . . .	0	2	0	0	0	9	31	0	9	29
Italy . . . . .	0	0	119	79	0	0	1,076	902	0	1,510
Latvia . . . . .	0	0	4	4	31	20	64	40	53	75
Norway . . . . .	0	0	73	55	0	0	306	249	0	403
Netherlands . . . . .	2	2	717	858	35	71	5,992	6,451	75	9,912
Poland . . . . .	0	0	9	24	0	2	269	132	4	271
Sweden . . . . .	—	—	49	79	—	—	628	730	—	957
Czechoslovakia . . . . .	0	0	15	62	2	2	302	434	2	798
Yugoslavia . . . . .	0	0	9	11	0	0	60	71	0	115
Canada . . . . .	0	0	0	0	243	2	0	256	205	256
United States . . . . .	—	—	996	11	—	—	3,878	3,126	—	4,502
Japan . . . . .	—	—	29	2	—	—	262	110	—	148
Australia . . . . .	0	0	44	141	0	0	293	388	0	450
Totals . . . . .	3,123	3,561	3,635	4,004	26,676	31,250	29,790	31,004	46,982	47,482

x) 2) See notes page 742.

COUNTRIES	AUGUST				EIGHT MONTHS (January-1 August 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	24	115	2	33	924	487	152	780	1,565	802
Denmark . . . . .	29,681	27,307	249	0	229,961	241,806	705	855	347,886	926
Estonia . . . . .	2,527	3,183	0	0	13,406	19,147	0	0	27,626	0
Irish Free State . . . . .	8,849	4,467	7	11	38,145	23,462	13	2,597	36,932	2,632
Finland . . . . .	2,167	2,595	99	0	17,331	23,552	351	0	32,020	0
Hungary . . . . .	498	437	0	0	4,727	2,544	0	0	4,495	0
Latvia . . . . .	3,889	4,971	0	0	24,337	27,335	0	0	41,002	2
Lithuania . . . . .	3,278	3,219	0	0	14,727	15,018	0	0	21,883	0
Norway . . . . .	0	57	2	4	761	1,898	97	73	2,421	90
Netherlands . . . . .	3,737	3,166	79	198	48,348	24,174	816	8,722	44,926	9,323
Poland . . . . .	450	71	0	243	1,978	2,608	2	417	2,707	866
Sweden . . . . .	4,079	2,520	22	4	21,863	20,494	49	22	29,875	33
U. S. S. R. . . . .	...	...	—	—	2) 18,422	2) 22,401	—	—	68,198	—
Argentina . . . . .	176	2,718	—	—	19,299	36,822	—	—	55,923	—
India . . . . .	13	11	44	15	128	159	304	269	262	428
Syria and Lebanon . . . . .	...	...	—	—	1) 66	1) 174	1) 955	1) 1,221	315	1,867
Australia . . . . .	5,567	10,812	0	0	111,715	126,612	—	0	229,105	0
New Zealand . . . . .	16,681	17,648	—	—	178,890	145,080	—	—	244,796	—
<i>Importing Countries:</i>										
Germany . . . . .	0	9	11,612	11,557	11	159	80,890	97,795	478	153,264
Belgium . . . . .	126	181	1,096	2,394	505	1,634	18,179	33,713	1,841	46,760
Spain . . . . .	0	9	0	0	15	33	4	26	44	42
France . . . . .	558	723	126	146	4,674	5,077	16,180	15,468	7,921	26,140
Gr. Brit. and N. Irel. . . . .	798	1,025	91,682	77,603	7,185	31,196	687,188	634,940	35,693	946,298
Greece . . . . .	—	—	42	55	—	362	829	—	—	1,197
Italy . . . . .	20	26	26	40	728	697	1,455	3,344	827	3,818
Switzerland . . . . .	0	0	13	15	2	4	829	6,898	7	8,151
Czechoslovakia . . . . .	0	0	11	75	2	26	465	2,130	26	2,703
Canada . . . . .	110	721	4	0	342	3,093	1,369	185	3,505	238
United States . . . . .	77	258	115	44	705	1,182	873	772	1,607	1,014
Ceylon . . . . .	—	—	24	29	—	—	412	406	—	602
Java and Madura . . . . .	—	—	...	...	—	—	1) 5,670	1) 5,384	—	8,792
Japan . . . . .	—	—	9	4	—	—	203	101	—	163
Algeria . . . . .	0	2	271	49	13	26	3,007	2,509	35	3,955
Egypt . . . . .	...	...	...	...	1) 218	1) 342	1) 470	1) 467	384	814
Tunis . . . . .	...	...	...	...	1) 4	1) 4	1) 1,036	1) 697	4	1,305
Totals . . . . .	80,485	86,251	105,535	92,519	759,432	777,244	822,038	820,580	1,244,309	1,222,225
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	176	198	0	0	1,129	805	0	2	2,601	4
Denmark . . . . .	1,415	959	4	2	15,391	8,391	49	97	14,535	130
Finland . . . . .	725	558	0	0	5,527	4,599	18	11	7,225	26
Italy . . . . .	2,829	4,769	778	622	33,554	40,475	6,314	5,432	66,399	8,772
Lithuania . . . . .	231	168	0	0	952	1,124	2	2	1,768	7
Norway . . . . .	492	229	11	11	2,491	2,158	106	143	3,644	240
Netherlands . . . . .	14,114	16,149	49	86	95,000	111,689	474	686	170,061	1,076
Poland . . . . .	15	33	22	35	123	558	298	368	767	586
Switzerland . . . . .	3,514	3,461	227	375	29,663	27,430	2,138	3,292	43,702	4,755
Czechoslovakia . . . . .	115	384	240	260	1,647	4,257	1,870	1,956	6,124	3,071
Yugoslavia . . . . .	392	276	4	7	1,728	1,263	46	106	2,617	150
Canada . . . . .	6,557	16,716	119	53	24,355	41,784	569	664	86,940	1,166
Australia . . . . .	262	478	4	0	6,455	3,710	40	11	8,801	60
New Zealand . . . . .	13,969	11,155	0	0	155,653	130,776	4	2	199,378	2
<i>Importing Countries:</i>										
Germany . . . . .	187	295	8,029	10,338	2,743	2,542	60,724	68,685	4,237	108,688
Austria . . . . .	293	514	146	181	2,901	2,127	1,598	2,745	3,982	3,732
Belgium . . . . .	35	37	4,974	4,502	236	373	31,453	29,575	551	45,660
Spain . . . . .	7	15	216	249	613	183	1,305	1,371	238	2,480
Irish Free State . . . . .	2	2	2	198	2	29	322	1,442	37	2,019
France . . . . .	1,623	1,605	3,012	4,896	16,568	18,484	33,596	32	29,211	52,146
Gr. Brit. and N. Irel. . . . .	538	646	30,446	27,829	4,275	4,713	228,195	223,829	7,242	336,733
Greece . . . . .	68	18	15	40	—	110	677	1,248	620	1,753
Hungary . . . . .	4	2	0	0	33	29	11	11	33	11
Portugal . . . . .	—	—	...	...	—	—	1) 214	1) 247	—	608
Sweden . . . . .	—	—	68	82	—	—	520	564	—	1,045
United States . . . . .	106	104	3,100	4,383	988	1,005	32,326	33,213	1,490	55,629
India . . . . .	0	0	93	73	0	2	642	569	2	950
Java and Madura . . . . .	—	—	...	...	—	—	1) 970	1) 869	—	1,642
Syria and Lebanon . . . . .	...	...	...	...	1) 15	1) 22	1) 939	1) 509	68	1,195
Algeria . . . . .	4	7	847	1,067	88	104	7,233	6,067	159	11,100
Egypt . . . . .	...	...	...	...	1) 86	1) 134	1) 3,020	1) 2,549	254	5,260
Tunis . . . . .	...	...	...	...	1) 33	1) 7	1) 1,570	1) 1,164	13	2,191
Totals . . . . .	47,673	58,778	52,406	55,289	402,930	408,883	417,243	420,295	662,699	652,887

1) 2) See notes page 742.

COUNTRIES	AUGUST				TWELVE MONTHS (August 1-July 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	2,899	2,471	49	35	45,676	46,789	653	620	—	—
Argentina . . .	93	117	—	—	567	602	—	—	—	—
Brazil . . .	—	—	—	—	22	183	—	—	—	—
India . . .	688	333	88	37	10,617	7,075	924	2,249	—	—
Egypt . . .	—	—	—	—	5,774	7,500	0	0	—	—
<i>Importing Countries:</i>										
Germany . . .	110	137	805	439	1,259	1,640	9,467	8,327	—	—
Austria . . .	0	0	53	24	0	0	432	553	—	—
Belgium . . .	37	22	187	84	298	348	1,896	1,349	—	—
Denmark . . .	—	—	20	4	—	—	143	134	—	—
Spain . . .	4	2	110	159	15	22	2,211	2,070	—	—
Estonia . . .	0	0	7	7	0	0	60	75	—	—
Finland . . .	0	0	18	9	0	0	174	159	—	—
France . . .	37	26	534	240	368	494	7,211	4,286	—	—
Gr. Brit. and N. Irel. . .	40	40	1,133	955	514	485	12,798	12,452	—	—
Greece . . .	0	0	11	0	0	0	174	192	—	—
Hungary . . .	0	0	42	26	0	0	410	333	—	—
Italy . . .	0	0	335	243	0	0	4,178	4,037	—	—
Latvia . . .	0	0	7	4	0	0	88	51	—	—
Norway . . .	0	0	2	4	0	0	55	44	—	—
Netherlands . . .	2	0	55	44	7	7	763	838	—	—
Poland . . .	0	2	130	108	15	22	1,228	1,074	—	—
Portugal . . .	—	—	—	—	—	—	437	434	—	—
Sweden . . .	—	—	51	24	—	—	527	564	—	—
Switzerland . . .	0	0	37	29	2	4	571	505	—	—
Czechoslovakia . . .	7	9	106	121	106	137	1,768	2,002	—	—
Yugoslavia . . .	0	0	24	24	0	0	194	201	—	—
Canada . . .	—	—	106	62	—	—	988	974	—	—
China . . .	—	—	—	—	—	—	2,806	—	—	—
Japan . . .	42	0	1,012	608	401	1,041	9,806	16,484	—	—
Algeria . . .	—	—	0	0	7	4	7	7	—	—
<b>Totals . . .</b>	<b>3,959</b>	<b>3,159</b>	<b>4,922</b>	<b>3,301</b>	<b>65,648</b>	<b>66,353</b>	<b>57,163</b>	<b>60,034</b>		
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>					TWELVE MONTHS (September 1-August 31)				TWELVE MONTHS (Sept. 1-August 31)	
Irish Free State . .	2,793	937	115	128	15,545	9,949	842	948	—	—
Hungary . . .	1,268	500	99	93	3,684	2,344	1,607	1,285	—	—
Argentina . . . a)	13,433	11,920	—	—	327,875	254,013	—	—	—	—
Chile . . . b)	1,111	913	—	—	16,464	8,007	—	—	—	—
India . . .	—	—	—	—	21,045	25,115	—	—	—	—
Syria and Lebanon . .	7,366	4,118	362	474	50,559	35,402	7,452	5,020	—	—
Algeria . . .	—	—	—	—	3,757	3,322	1,272	714	—	—
Egypt . . .	1,069	622	172	154	10,695	6,856	2,041	1,252	—	—
Un. of S. Africa . . a)	1,618	5,739	—	—	3,560	1,215	68	2	—	—
Australia . . . b)	311	516	—	—	260,257	298,046	1	0	—	—
New Zealand . . . a)	6,539	6,984	141	22	6,429	5,296	798	1,261	—	—
Poland . . . b)	5,108	4,332	0	4	860,134	762,756	4,253	2,033	—	—
Switzerland . . . a)	2,934	1,781	0	0	76,842	58,535	42	15	—	—
Sweden . . . b)	3,940	5,723	0	9	223,812	177,836	0	2	—	—
<i>Importing Countries:</i>					65,202	45,519	9	29	—	—
Germany . . . a)	386	192	19,518	16,872	3,763	9,780	314,369	241,275	—	—
Austria . . . b)	855	668	4,041	2,965	8,695	9,681	40,631	31,656	—	—
Belgium . . . a)	24	0	736	948	245	82	17,756	13,982	—	—
Denmark . . . b)	7,747	1,742	13,816	9,449	96,336	18,715	200,544	116,938	—	—
Spain . . .	1,969	1,819	331	335	22,902	22,465	4,244	3,036	—	—
France . . .	4	7	549	291	273	157	5,258	4,409	—	—
Finland . . .	306	245	1,351	1,184	2,571	2,324	11,435	10,172	—	—
Greece . . .	0	0	425	251	79	86	4,072	2,762	—	—
Gr. Brit. and N. Irel. . .	3,618	3,214	36,908	20,058	42,911	45,631	564,952	393,121	—	—
Italy . . . a)	35,539	24,456	46,108	30,629	425,553	315,628	964,435	888,010	—	—
Norway . . . b)	134	174	97	849	300	2,577	2,094	2,094	—	—
Netherlands . . . a)	201	40	7,727	6,733	705	1,232	174,523	145,054	—	—
Poland . . . b)	373	176	1,446	946	4,830	1,620	16,010	14,290	—	—
Sweden . . .	110	51	185	187	1,032	756	2,211	2,355	—	—
Switzerland . . . a)	384	179	591	827	3,280	1,933	8,640	7,229	—	—
Czechoslovakia . . . b)	126	68	598	884	1,243	761	8,662	8,148	—	—
Yugoslavia . . .	101	82	4,996	2,090	1,424	1,687	38,649	27,084	—	—
Canada . . .	—	—	1,601	915	—	—	17,948	17,745	—	—
United States . . .	46	11	1,071	1,089	317	397	20,765	19,709	—	—
Japan . . .	132	26	3,519	1,257	1,473	1,870	32,909	32,037	—	—
Tunis . . .	18	13	478	331	161	152	4,023	2,937	—	—
<b>Totals . . .</b>	<b>101,029</b>	<b>78,456</b>	<b>199,918</b>	<b>109,700</b>	<b>2,572,201</b>	<b>2,138,767</b>	<b>2,828,551</b>	<b>2,278,984</b>		

a) = Wool, greasy; b) = Wool, scoured. — 1) 2) See notes page 742.

COUNTRIES	AUGUST		TWO MONTHS (July 1-August 31)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	AUGUST		TWO MONTHS (July 1-August 31)		TWELVE MONTHS (July 1- June 30)
	1933	1932	1933-34	1932-33	1932-33		1933	1932	1933-34	1932-33	1932-33
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	196,565	1	64,155	Ceylon . . . . .	13,962	20,589	30,375	40,184	241,791
India . . . . .	104	4	858	49	18,600	China . . . . .	...	...	15,759	1	8,528
Java and Madura . . . . .	5,803	16,510	12,002	26,063	79,858	India . . . . .	42,311	43,184	69,078	77,482	367,333
						Java and Madura . . . . .	7,258	10,990	13,737	22,035	157,807
						Japan . . . . .	4,037	4,698	6,583	7,169	29,736
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	20	143	40	397	1,310	Belgium . . . . .	0	0	0	2	9
Belgium . . . . .	15	53	35	137	410	Irish Free State . . . . .	2	2	4	7	31
France . . . . .	22	0	24	2	128	France . . . . .	2	0	4	2	15
Netherlands . . . . .	897	1,270	1,642	2,284	16,261	Gr. Britain and N. Irel. . . . .	11,001	9,427	18,731	16,863	82,228
Portugal . . . . .	...	...	434	306	2,191	Netherlands . . . . .	9	9	26	18	128
Switzerland . . . . .	42	22	82	49	320	United States . . . . .	26	20	44	42	298
Canada . . . . .	2	2	9	7	51	Syria and Lebanon . . . . .	...	...	0	0	2
United States . . . . .	1,378	1,351	4,416	2,694	13,358	Algeria . . . . .	4	2	7	4	35
Ceylon . . . . .	0	0	2	0	7	Union of S. Africa . . . . .	...	...	0	0	2
Syria and Lebanon . . . . .	...	...	0	2	11	Australia . . . . .	170	49	249	99	791
Australia . . . . .	4	0	7	46	46	New Zealand . . . . .	...	...	...	...	104
<b>Totals . . . . .</b>	—	—	—	—	1,746,737	<b>Totals . . . . .</b>	78,782	88,970	154,597	172,437	965,290
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	25,408	17,414	52,761	44,110	279,327	Germany . . . . .	807	536	1,592	1,418	10,102
Austria . . . . .	580	1,757	1,872	4,171	13,093	Austria . . . . .	20	90	62	243	875
Belgium . . . . .	9,621	8,245	17,994	16,790	96,356	Belgium . . . . .	44	51	66	79	597
Bulgaria . . . . .	62	20	139	66	919	Denmark . . . . .	73	64	137	139	1,265
Denmark . . . . .	4,885	2,044	9,365	3,982	49,022	Spain . . . . .	29	4	60	44	289
Spain . . . . .	3,203	3,203	7,716	6,912	43,385	Estonia . . . . .	4	2	11	4	71
Estonia . . . . .	20	0	46	2	101	Irish Free State . . . . .	1,969	1,711	3,355	3,314	22,836
Irish Free State . . . . .	29	29	53	44	584	Finland . . . . .	20	15	35	29	223
Finland . . . . .	3,289	2,928	6,314	5,401	33,819	France . . . . .	181	203	981	432	3,199
France . . . . .	29,176	30,173	62,221	62,173	424,502	Gr. Britain and N. Irel. . . . .	41,454	48,837	69,472	89,510	572,897
Gr. Britain and N. Irel. . . . .	2,445	3,940	5,660	7,286	35,404	Ireland . . . . .	37	60	49	75	353
Ireland . . . . .	1,559	844	2,482	1,563	7,976	Greece . . . . .	15	46	33	77	547
Greece . . . . .	313	529	688	1,076	5,818	Hungary . . . . .	11	9	24	18	265
Hungary . . . . .	6,442	6,815	13,305	13,627	84,578	Italy . . . . .	2	13	7	22	117
Italy . . . . .	11	20	18	31	324	Lithuania . . . . .	4	13	4	20	121
Latvia . . . . .	22	33	57	62	373	Norway . . . . .	26	35	55	64	381
Lithuania . . . . .	2,901	3,190	6,160	5,576	35,944	Netherlands . . . . .	2,200	2,275	4,632	4,628	30,069
Norway . . . . .	15,723	6,940	23,836	13,170	97,738	Poland . . . . .	267	247	567	518	3,922
Netherlands . . . . .	1,171	1,100	2,624	2,396	15,296	Portugal . . . . .	...	...	42	37	423
Poland . . . . .	...	...	866	747	10,986	Sweden . . . . .	73	51	115	99	875
Portugal . . . . .	7,233	7,471	12,498	14,105	99,449	Switzerland . . . . .	117	119	218	251	2,097
Sweden . . . . .	2,831	2,674	4,855	5,168	37,168	Czechoslovakia . . . . .	64	82	82	139	1,321
Switzerland . . . . .	2,105	1,997	3,975	4,094	25,441	Yugoslavia . . . . .	22	15	46	40	419
Czechoslovakia . . . . .	1,246	968	2,504	2,105	14,207	Canada . . . . .	3,012	1,953	4,914	3,327	38,480
Yugoslavia . . . . .	1,907	1,482	4,160	3,803	30,003	United States . . . . .	11,574	8,005	20,483	14,284	94,810
Canada . . . . .	148,892	79,290	263,070	167,827	1,458,438	Chile . . . . .	...	...	190	293	3,834
United States . . . . .	...	...	42	282	3,979	Syria and Lebanon . . . . .	...	...	13	9	198
Chile . . . . .	586	258	1,265	390	2,513	Turkey . . . . .	77	553	190	756	2,339
Ceylon . . . . .	421	201	820	278	4,332	Algeria . . . . .	328	304	626	556	4,129
Japan . . . . .	...	...	198	82	2,218	Egypt . . . . .	...	...	1,230	1,771	16,290
Syria and Lebanon . . . . .	2,249	2,668	2,531	3,933	10,677	Tunis . . . . .	...	...	183	273	2,654
Turkey . . . . .	2,478	2,948	4,817	5,302	30,585	Union of S. Africa . . . . .	...	...	1,047	1,005	11,605
Algeria . . . . .	...	...	1,790	1,376	16,193	Australia . . . . .	4,804	5,090	10,093	9,167	48,434
Egypt . . . . .	...	...	247	353	3,501	New Zealand . . . . .	...	...	...	...	13,775
Tunis . . . . .	...	...	2,077	2,233	27,276						
Un. of S. Africa . . . . .	351	227	624	366	3,578						
Australia . . . . .	...	...	...	...	362	<i>Exporting Countries:</i>					
New Zealand . . . . .	...	...	...	...	110	China . . . . .	...	...	77	375	1,653
						India . . . . .	611	866	906	1,188	5,518
<i>Exporting Countries:</i>						Java and Madura . . . . .	...	368	227	714	3,272
India . . . . .	0	0	0	44	110	<b>Totals . . . . .</b>	67,845	71,617	121,824	134,922	900,255
<b>Totals . . . . .</b>	277,159	189,408	519,550	400,926	3,005,575						

1) See notes page 742.

COUNTRIES	AUGUST		ELEVEN MONTHS (Oct. 1-August 31)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	AUGUST		TWELVE MONTHS (August 1-July 31)		TWELVE MONTHS (August 1-July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>Exports.</b>						<b>(Thousand cents).</b>					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Grenada . . . . .	...	...	1) 8,587	1) 8,834	9,656	Bulgaria . . . . .	165	119	1,881	6,691	—
Dominican Republ. . . . .	...	...	1) 41,507	1) 35,312	35,977	Spain . . . . .	2	0	11	5)	—
Brazil . . . . .	...	...	1) 206,748	1) 164,659	216,389	Hungary . . . . .	1,085	481	4,405	10,752	—
Ecuador . . . . .	...	...	1) 20,849	1) 33,409	35,689	Lithuania . . . . .	7	2	37	55	—
Trinidad . . . . .	...	...	1) 45,459	1) 34,705	39,617	Poland . . . . .	33	24	683	1,929	—
Venezuela . . . . .	...	...	4) 16,976	4) 10,748	35,439	Rumania . . . . .	...	...	31	22,331	—
Ceylon . . . . .	412	271	7,981	9,083	9,266	U. S. S. R. . . . .	...	...	2) 7) 9,489	2) 7) 38,563	—
Java and Madura . . . . .	487	589	2,538	2,820	3,300	Yugoslavia . . . . .	37	132	580	8,935	—
Cameroon . . . . .	...	...	1) 34,584	1) 24,624	27,315	Canada . . . . .	6,426	11,830	156,745	123,625	—
Ivory Coast . . . . .	...	...	2) 60,473	2) 50,927	54,578	United States . . . . .	366	3,126	17,209	65,566	—
Gold Coast . . . . .	50,259	13,810	542,703	444,680	462,878	Argentina . . . . .	9,894	2,359	78,463	84,177	—
Nigeria . . . . .	2,646	9,323	149,835	121,892	123,929	Chile . . . . .	...	...	5)	44	—
St. Thomas and Prince Is. . . . .	...	...	3) 11,039	3) 13,360	25,867	India . . . . .	29	57	5)	1,118	—
Togoland . . . . .	...	...	1) 14,264	1) 13,673	13,916	Japan . . . . .	99	24	5)	5)	—
<i>Importing Countries:</i>						Turkey . . . . .	97	2	260	260	—
Germany . . . . .	44	20	123	496	496	Algeria . . . . .	814	1,358	5,022	3,508	—
Belgium . . . . .	13	287	474	1,314	1,508	French Morocco . . . . .	448	2	3,380	4,795	—
France . . . . .	0	0	66	4	4	Tunis . . . . .	...	...	3,201	5,104	—
Netherlands . . . . .	198	459	3,523	5,983	6,740	Australia . . . . .	4,782	2,247	88,935	92,453	—
United States . . . . .	434	198	9,156	6,418	7,011	<b>Totals . . . . .</b>	<b>24,284</b>	<b>21,763</b>	<b>370,332</b>	<b>469,906</b>	<b>—</b>
Australia . . . . .	90	0	291	141	143						
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1,109,718</b>	<i>Importing Countries:</i>					
<b>Imports.</b>						<b>b) NET IMPORTS.</b>					
<i>Importing Countries:</i>						Germany . . . . .	190	1,292	3,012	13,913	—
Germany . . . . .	11,484	9,711	158,669	164,798	175,744	Austria . . . . .	525	410	7,948	8,089	—
Austria . . . . .	377	1,012	7,044	12,743	13,651	Belgium . . . . .	2,332	1,759	23,559	27,935	—
Belgium . . . . .	988	1,188	14,652	20,953	21,588	Denmark . . . . .	820	966	7,220	10,412	—
Bulgaria . . . . .	0	44	608	1,250	1,323	Spain . . . . .	6)	6)	6)	6,460	—
Denmark . . . . .	276	386	8,005	7,597	7,756	Estonia . . . . .	0	0	0	265	—
Spain . . . . .	723	600	21,903	18,936	19,701	Irish Free State . . . . .	1,235	1,010	10,726	11,720	—
Estonia . . . . .	33	7	375	448	452	Finland . . . . .	287	234	2,573	2,555	—
Irish Free State . . . . .	357	84	2,978	1,065	1,149	France . . . . .	972	6,424	19,679	46,247	—
Finland . . . . .	9	9	172	154	181	Gr. Brit. and N. Irel. . . . .	10,212	10,633	129,134	143,918	—
France . . . . .	6,872	5,778	88,026	84,843	91,201	Greece . . . . .	805	1,023	11,819	14,204	—
Gr. Brit. and N. Irel. . . . .	7,097	9,875	140,532	127,957	138,407	Italy . . . . .	348	24	6,654	19,956	—
Greece . . . . .	154	51	2,099	2,661	2,844	Latvia . . . . .	0	11	15	575	—
Hungary . . . . .	313	542	5,783	5,203	5,573	Norway . . . . .	370	234	5,060	5,093	—
Italy . . . . .	926	789	15,516	13,609	15,053	Netherlands . . . . .	1,603	1,338	16,319	18,636	—
Latvia . . . . .	66	82	1,111	1,532	1,607	Portugal . . . . .	...	...	796	1,660	—
Lithuania . . . . .	7	68	655	567	615	Sweden . . . . .	97	511	1,938	4,096	—
Norway . . . . .	392	139	3,611	4,899	5,033	Switzerland . . . . .	7) 928	7) 1,089	7) 11,457	7) 12,666	—
Netherlands . . . . .	5,675	4,564	96,938	85,548	92,202	Czechoslovakia . . . . .	90	289	7,165	14,758	—
Poland . . . . .	1,373	833	14,015	10,591	11,444	<b>Total Europe . . . . .</b>	<b>20,814</b>	<b>27,247</b>	<b>265,074</b>	<b>363,158</b>	<b>—</b>
Portugal . . . . .	...	...	787	756	855	Chile . . . . .	...	...	1,477	6)	—
Sweden . . . . .	1,182	340	8,428	10,487	10,921	Ceylon . . . . .	35	44	518	542	—
Switzerland . . . . .	591	366	16,253	10,889	11,197	China . . . . .	...	...	32,955	...	—
Czechoslovakia . . . . .	1,067	1,592	16,513	19,568	21,526	India . . . . .	6)	6)	564	6)	—
Yugoslavia . . . . .	134	53	1,164	1,329	1,501	Indo-China . . . . .	...	...	456	518	—
Canada . . . . .	1,396	778	18,964	15,300	16,444	Japan . . . . .	6)	6)	3,563	12,384	—
United States . . . . .	53,502	17,895	486,207	375,019	420,293	Java and Madura . . . . .	...	...	1,276	1,526	—
Japan . . . . .	106	79	1,971	1,887	1,960	Syria and Lebanon . . . . .	...	...	913	223	—
Australia . . . . .	582	871	10,005	10,009	11,252	Egypt . . . . .	...	...	267	4,231	—
New Zealand . . . . .	...	...	2) 2,053	2) 1,294	1,554	Union of S. Africa . . . . .	...	...	168	1,049	—
<b>Totals . . . . .</b>	<b>95,682</b>	<b>57,736</b>	<b>1,145,037</b>	<b>1,011,892</b>	<b>1,103,029</b>	New Zealand . . . . .	...	...	608	2)	381

\*) Flour reduced to grain on the basis of the coefficient: 1,000 cents-of flour = 1,333.33 cents of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 July. — 2) Data up to 30 June. — 3) Data up to 30 April. — 4) Data up to 31 March. — 5) See Net Imports. —

6) See Net Exports. — 7) Wheat only. — 8) Commercial season July 1-June 30. — 9) Not including China. — 10) Not including French Morocco.



## STOCKS

STOCKS OF CEREALS IN FARMERS' HANDS IN THE UNITED STATES ON 1 OCTOBER

PRODUCTS	% Stocks: total production			Stocks in absolute figures					
	1933	1932	1931	1933	1932	1931	1933	1932	1931
				1,000 centals			1,000 bushels		
Wheat . . . . .	59.0	55.9	54.0	182,236	243,682	291,656	303,727	406,137	486,094
Oats . . . . .	83.4	78.2	78.7	186,418	309,711	281,630	582,555	967,848	880,094
Maize (old crop) . . . . .	10.9	11.3	9.3	174,910	139,664	89,828	312,339	249,400	160,408

COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	136,509	119,371	117,964	112,351	71,470	227,515	198,952	196,607	187,252	119,117
U.S. in Canada . . . . .	1,868	2,203	2,244	5,102	19,507	3,114	3,672	3,740	8,503	32,511
U.S. in the United States . .	93,991	91,043	80,968	116,977	153,796	156,652	151,738	134,946	194,961	256,327
Canad. in the United States .	3,451	2,871	4,018	6,592	5,470	5,752	4,785	6,697	10,987	9,116
Total . . . . .	235,819	215,488	205,194	241,022	250,243	393,033	359,147	341,990	401,703	417,071
<b>RYE:</b>										
Canadian in Canada . . . .	2,763	3,060	3,125	2,771	6,891	4,934	5,464	5,581	4,948	12,306
U.S. in Canada . . . . .	0	0	1	55	688	0	0	1	99	1,229
U.S. in the United States . .	7,262	6,719	6,313	4,872	5,653	12,968	11,998	11,273	8,700	10,095
Canad. in the United States .	146	158	108	231	218	260	283	192	412	390
Total . . . . .	10,171	9,937	9,547	7,929	13,450	18,162	17,745	17,047	14,159	24,020
<b>BARLEY:</b>										
Canadian in Canada . . . .	5,126	4,280	3,712	2,777	5,440	10,679	8,917	7,733	5,786	11,334
U.S. in Canada . . . . .	0	0	0	55	12	0	0	0	114	24
U.S. in the United States . .	9,278	8,628	7,002	4,307	3,461	19,330	17,975	14,587	8,973	7,211
Canad. in the United States .	0	0	0	13	2	0	0	0	27	4
Total . . . . .	14,404	12,908	10,714	7,152	8,915	30,009	26,892	22,320	14,900	18,573
<b>OATS: (1)</b>										
Canadian in Canada . . . .	5,415	4,590	4,166	2,473	3,239	16,921	14,345	13,018	7,728	10,122
U.S. in Canada . . . . .	330	312	225	520	68	1,030	975	702	1,626	211
U.S. in the United States . .	16,271	14,782	11,388	9,267	5,545	50,846	46,193	35,589	28,960	17,327
Canad. in the United States .	0	0	0	0	13	0	0	0	0	41
Total . . . . .	22,016	19,684	15,779	12,260	8,865	68,797	61,513	49,309	38,314	27,701
<b>MAIZE:</b>										
U.S. in Canada . . . . .	4,316	3,963	3,985	1,576	289	-7,707	7,076	7,116	2,815	516
Of other origin in Canada . .	267	323	466	143	295	477	576	832	255	527
U.S. in the United States . .	33,483	32,348	35,433	10,354	3,128	59,791	57,764	63,274	18,489	5,586
Total . . . . .	38,483	36,634	39,884	12,073	3,712	67,975	65,416	71,222	21,559	6,629

1) For oats the bushel is of 32 lb.

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of grain) . . .	20,722	20,818	18,970	17,794	22,709	34,536	34,696	31,616	29,656	37,848
Rye . . . . .	120	782	706	826	518	214	1,397	1,260	1,474	926
Barley . . . . .	2,812	2,112	2,112	3,384	3,720	5,858	4,808	4,400	7,050	7,750
Oats . . . . .	291	666	534	851	1,168	910	2,080	1,670	2,660	3,650
Maize . . . . .	14,122	16,150	13,474	14,798	21,619	25,217	19,911	24,060	26,426	38,606

Authority: Broomhall's Corn Trade News.

## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks: total production				% Quantities intended for sale: total production				% Stocks in elevators: total production 1)	
	15 Sept. 1933	15 Sept. 1932	15 Sept. 1931	15 Sept. 1930	15 Sept. 1933	15 Sept. 1932	15 Sept. 1931	15 Sept. 1930	15 Sept. 1933	15 Sept. 1932
Winter wheat . . .	85.5	81.8	76.4	76.8	71.6	67.5	60.6	63.5	6.8	6.2
Spring wheat . . .	94.5	90.7	89.5	89.1	82.1	79.4	77.8	79.5	6.0	4.5
Winter rye . . . .	84.5	82.2	77.3	85.2	50.1	47.8	37.1	52.7	4.7	3.9
Winter barley . . .	64.8	54.9	52.8	55.8	17.4	13.7	11.2	8.5	4.8	0.5
Spring barley . . .	86.9	87.8	91.6	81.3	58.5	55.2	64.2	61.6	1.6	0.6
Oats . . . . .	94.9	95.5	94.5	95.3	20.2	24.7	23.2	38.3	0.2	0.4
Early potatoes . . .	43.6	93.5	92.0	93.3	21.4	41.8	37.4	46.3	0.0	0.1
Late potatoes . . .	98.0				39.4					

1) These stocks are the property of farmers but are not on the farms; as they are partly in commercial elevators certain quantities are reckoned twice, the report on stocks in elevators not making any distinction of ownership.

Authority: Preisberichtsstelle beim Deutschen Landwirtschaftsrat.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	Sept. 1933	Aug. 1933	July 1933	Sept. 1932	Sept. 1933	Aug. 1933	July 1933	Sept. 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	19,769	13,426	7,789	15,214	32,948	22,377	12,981	25,356
Flour for bread . . . .	2,661	2,416	2,632	2,396	1,358	1,233	1,343	1,223
TOTAL 2) . . . . .	23,316	16,647	11,299	18,409	38,863	27,747	18,831	30,683
RYE:								
Grain . . . . .	17,681	14,674	6,982	13,307	31,574	26,204	12,468	23,763
Flour for bread . . . .	1,563	1,270	917	1,495	797	648	468	763
TOTAL 2) . . . . .	19,764	16,367	8,206	15,300	35,293	29,228	14,652	27,324
BARLEY . . . . .	4,085	3,743	2,180	2,994	8,511	7,799	4,543	6,237
OATS . . . . .	1,424	946	708	1,310	4,451	2,956	2,212	4,092

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First day of the month					First day of the month				
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	7,200	5,640	5,856	3,792	12,480	12,000	9,400	9,760	6,320	20,800
Flour as grain . .	720	504	792	768	768	1,200	840	1,320	1,280	1,280
TOTAL . . . . .	7,920	6,144	6,648	4,560	13,248	13,200	10,240	11,080	7,600	22,080
Barley . . . . .	900	580	560	580	720	1,875	1,208	1,167	1,208	1,500
Oats . . . . .	400	464	560	400	896	1,250	1,450	1,750	1,250	2,800
Maize . . . . .	3,528	3,312	2,760	3,624	1,680	6,300	5,914	4,929	6,471	3,000

1) Imported cereals.  
Authority: *Broomhall's Corn Trade News*.

STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931
	1,000 centals					1,000 bales (1 bale = 478 lb.)				
Great Britain:										
American . . . . .	2,163	2,175	2,178	1,752	1,395	452	455	455	366	292
Argentine, Brazil- ian, etc. . . . .	184	151	148	214	277	39	32	31	45	58
Peruvian, etc. . .	400	344	220	608	353	84	72	46	127	74
East Indian, etc.	300	307	333	272	574	63	64	70	57	120
Egyptian, Sudan- ese . . . . .	1,143	1,233	1,208	1,483	1,265	239	258	253	310	265
Other 1) . . . . .	215	236	229	112	233	45	49	48	24	48
TOTAL . . . . .	4,405	4,446	4,316	4,441	4,097	922	930	903	929	857
Bremen:										
American . . . . .	1,967	2,075	2,270	1,398	872	412	434	475	292	182
Other . . . . .	121	128	88	51	71	25	27	18	11	15
TOTAL . . . . .	2,088	2,203	2,358	1,449	943	437	461	493	303	197
Le Havre:										
American . . . . .	786	762	917	624	896	165	159	192	130	187
Other . . . . .	58	55	54	55	153	12	12	11	12	32
TOTAL . . . . .	844	817	971	679	1,049	177	171	203	142	219
Total Continent 2):										
American . . . . .	3,361	3,550	3,928	2,500	1,639	703	743	822	523	343
Argentine, Brazil- ian, etc. . . . .	60	51	41	47	121	13	11	9	10	25
E. Indian, Austral- ian, etc. . . . .	177	198	186	65	171	37	41	39	14	36
Egyptian . . . . .	103	113	109	140	117	22	24	23	29	25
W. Indian, W. Af- rican, E. Afri- can, etc. . . . .	36	35	31	36	40	7	7	6	7	8
TOTAL . . . . .	3,737	3,947	4,295	2,788	2,088	782	826	899	583	437

1) Includes W. Indian, etc., E. African, etc., W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports.  
Authority: *Liverpool Cotton Ass.*

## STOCKS OF COTTON ON HAND IN THE UNITED STATES.

LOCATION	Last day of the month					Last day of the month				
	Sept. 1933	Aug. 1933	July 1933	Sept. 1932	Sept. 1931	Sept. 1933	Aug. 1933	July 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . .	5,706	5,701	6,640	5,342	3,806	1,161	1,160	1,351	1,087	776
In public storage and at compresses . .	36,281	28,463	28,231	39,204	30,975	7,375	5,786	5,739	7,970	6,297
TOTAL . .	41,987	34,164	34,871	44,546	34,781	8,536	6,946	7,090	9,057	7,073

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931
	1,000 centals					1,000 bales (1 bale = 478 lb.)				
Bombay 1) . . . .	2,559	2,876	3,272	2,684	2,144	535	602	685	562	449
Alexandria . . . .	1,788	1,706	2,352	3,257	4,103	374	357	492	681	858

1) Stocks held by exporters, dealers and mills.

Authorities: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal.*

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

On pages 756 to 758 the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

In addition to the original data summary table are given below.

*Quarterly general index-numbers of prices of agricultural products.*

(Base: first quarter of 1929 = 100).

COUNTRIES	1931		1932				1933		
	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter
Germany . . . . .	77.5	73.0	70.9	70.2	68.2	65.1	61.5	63.3	66.2
England and Wales . . . . .	83.8	79.2	81.2	79.2	72.9	70.1	72.9	70.8	72.2
Argentina . . . . .	59.7	63.4	58.1	56.6	58.4	52.9	50.5	53.7	58.0
Canada . . . . .	55.6	55.8	53.2	50.8	48.9	45.0	44.9	51.5	58.8
Estonia . . . . .	62.8	56.7	52.8	49.3	47.3	50.0	...	...	...
United States. . . . .	55.4	50.2	44.9	41.2	42.8	39.5	36.8	44.1	...
Finland . . . . .	59.3	54.4	48.3	44.5	45.9	43.3	39.7	46.5	...
Hungary . . . . .	64.5	67.3	72.6	67.3	67.3	68.2	68.2	68.2	70.1
Italy . . . . .	64.2	66.4	57.2	62.7	61.4	53.0	53.0	50.0	41.0
New Zealand a) . . . . .	61.4	62.4	64.5	65.4	60.1	60.0	55.8	50.1	48.8
Netherlands . . . . .	96.5	97.2	91.8	88.4	85.8	85.5	85.5	82.0	92.1
Poland . . . . .	70.7	61.1	67.9	54.6	53.6	53.6	50.4	50.4	55.7
	63.4	63.3	58.7	63.7	54.4	51.3	53.8	55.0	50.6

a) Bureau of Agricultural Economics. — b) Bureau of Labor. — c) Base: first quarter of 1931 = 100.

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise stated, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	20	13	6	29	22	AVERAGE 1)					Commercial Season	
	Oct.	Oct.	Oct.	Sept.	Sept.	Sept.	Oct.	Oct.	Oct.		1932-33	1932-33
	1933	1933	1933	1933	1933	1933	1932	1931				
<b>WHEAT.</b>												
Budapest: Tisza region (78 kg. hl.; pengő p. quintal) . . . . .	7.62	7.70	7.67	7.90	8.17	8.15	13.78	9.69			13.73	12.22
Braila: Good quality (lei p. quintal) . . . . .	n. 340	320	n. 365	n. 370	n. 370	377	n. 540	277	n. 535	305		
Winnipeg: No. 1 Manitoba (cents p. 60 lb.) . . . . .	59 1/4	57 1/4	59 1/4	62 1/4	65 1/4	66 1/4	48 1/4	60 1/4	54 1/4	59 1/4		
Chicago: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	n. 81 1/4	80 1/4	86 1/4	88 1/4	86 1/4	87	n. 49	52 1/4	59 1/4	54 1/4		
Minneapolis: No. 1 Northern (cent p. 60 lb.) . . . . .	82 1/4	78 1/4	84 1/4	89	88 1/4	87 1/4	51 1/4	68 1/4	60 1/4	66 1/4		
New-York: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	91	88 1/4	93 1/4	98	98	97 1/4	56 1/4	65 1/4	68 1/4	66 1/4		
Buenos Aires b): Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.27 1/2	5.40	5.45	5.60	6.00	5.99	6.72	7.01	6.09	6.68		
Karachi: Karachi white, 2% barley, 1 1/2% dirt (rupees p. 656 lb.) . . . . .	21-2-0	21-2-0	23-3-0	23-7-0	23-7-0	23-9-7	29-0-6	18-3-10	28-4-2	21-15-6		
Berlin: Home grown (Rm. p. quint.) 2) . . . . .	n. 18.40	n. 18.40	n. 18.40	18.20	18.10	17.82	19.72	21.57	19.60	23.63		
Hamburg c. i. f. (Rm. p. quint.):												
No. 2 Manitoba . . . . .	7.37	7.24	7.28	7.53	7.92	8.07	8.81	10.10	8.83	10.38		
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	9.01	n. q.	9.32		
Barusso 3) . . . . .	6.48	6.39	6.69	6.81	7.12	7.20	8.49	8.49	7.76	8.78		
Antwerp (francs p. quintal):												
Home grown . . . . .	57.00	59.00	60.00	62.00	63.00	63.40	80.75	n. q.	79.70	83.10		
No. 1 Hard Winter, Gulf . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	80.60	76.00	77.70	81.75		
Paris: Home-grown, 75-77 kg. (francs p. quintal) (4) . . . . .	n. 118.00	n. 118.00	n. 118.00	n. 116.50	n. 116.50	n. 116.50	114.70	162.45	107.35	167.10		
London: Home grown (sh. p. 504 lb.) 5) . . . . .	20/6	20/6	20/6	21/-	21/3	20/9 1/2	24/10	25/7	24/8 1/2	26/5		
London and Liverpool, c. i. f., parcels, shipping current month (sh. p. 480 lb.):												
German (on sample) . . . . .	15/4 1/2	16/1 1/2	17/-	18/3	18/6	18/7 1/4	23/8 1/4	22/11	n. 23/8	n. 21/3		
South Russian (on sample) . . . . .	17/6	18/10 1/2	20/-	21/-	22/1 1/2	22 1/4	n. 25/7	22/8	n. 26/3	22/3		
No. 1 Manitoba . . . . .	23/9	24/3	24/4 1/2	24/9	25/4 1/2	26/6	25/11	27/9 1/4	26/4	28/10		
No. 3 Manitoba . . . . .	22/3	22/4 1/2	22/9	23/1 1/2	25/-	25/1	25/4 1/2	24/3	25/3	25/9		
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	23/-	n. q.	25/3		
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 27/9	n. q.	26/5		
Rosafé (a/float) 6) . . . . .	18/3	18/7 1/2	19/7 1/2	20/3	21/1 1/2	21/5	25/10	22/5	23/2	23/8		
Australian . . . . .	21/6	21/10 1/2	22/3	23/9	24/3	24/8 1/4	26/11	25/8	25/7	25/9		
Milan (a): Home-grown, soft, "Buono mercantile," (76-78 kg. p. hl.: lire p. quint.) . . . . .	80.50	82.00	83.00	83.00	82.50	82.60	105.00	94.80	101.80	106.20		
Genoa c. i. f.: Plate (U. S. \$ p. quint.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	10) n. 1.97	n. q.	n. 1.85	n. 2.21		
<b>RYE</b>												
Budapest: Home-grown (pengő p. quintal) . . . . .	4.10	4.22	4.30	4.70	4.95	4.73	7.28	9.75	6.77	12.24		
Berlin: Home-grown (Rm. p. quint.) 2) . . . . .	n. 14.90	n. 14.90	n. 14.90	14.40	14.40	14.32	15.52	18.82	15.52	19.00		
Hamburg, c. i. f. (Rm. p. quint.):												
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	6.35	n. q.	n. 6.40	n. 9.50		
La Plata (74-75 kg. p. hl.) 7) . . . . .	4.74	4.91	5.00	4.99	5.13	5.35	n. q.	n. q.	5.98	8.36		
Minneapolis: No. 2 (cents p. 56 lb.) . . . . .	56 1/2	58 1/2	62	69	68 1/2	70 1/2	31 1/2	41 1/2	41 1/2	42 1/2		
Groningen (a): Home-grown (fl. p. quint.) . . . . .	6.95	n. q.	7.50	3.27	3.30	3.29	3.90	4.36	3.92	5.13		
<b>BARLEY.</b>												
Braila: Average quality (lei p. quintal) . . . . .	113	110	120	125	127	130	205	218	186	263		
Winnipeg: No. 4 Western (cents p. 48 lb.) . . . . .	30 1/2	27 1/4	30 1/4	31 1/4	34 1/4	33 1/4	25	31 1/4	29 1/4	34 1/4		
Chicago: Feeding, (cents p. 48 lb.) . . . . .	45	40	48	54	n. 50	48	26 1/4	47 1/4	33 1/4	43 1/4		
Minneapolis: Feeding, lower grades (cents p. 48 lb.) . . . . .	38	41	46	50	54	50	19 1/4	38 1/4	27 1/4	38 1/4		
Berlin: Home-grown fodder (Rm. p. q.) 8) . . . . .	16.25	16.25	16.15	15.95	15.20	15.27	16.86	15.70	16.55	16.41		
Antwerp: Danubian (francs p. quint.) . . . . .	38.00	39.50	39.00	40.50	41.00	42.10	57.40	63.50	55.50	77.25		
London: English malting (sh. p. 448 lb.) 5) . . . . .	45/-	45/-	45/-	45/-	45/-	45/-	38/1	41/-	35/-	39/4		
London and Liverpool, c. i. f., parcels (shillings per 400 lb.):												
Danubian 3% . . . . .	12/1 1/4	12/1 1/4	12/9	12/6	13/1 1/4	13/0 1/4	n. q.	n. q.	n. 16/7	n. q.		
Russian (Azoff-Black sea) . . . . .	12/3	12/3	12/9	12/7 1/4	13/3	13/1	n. 15/9	17/3	n. 16/5	18/11		
Canadian Western, N. 3 . . . . .	15/3	15/6	15/9	n. q.	16/4 1/2	17/4 1/2	17/8 1/4	18/8	18/3	20/11		
Californian malting (sh. p. 448 lb.) . . . . .	26/3	26/3	26/3	26/3	26/3	26/2	21/3	35/2	22/8	33/4		
Groningen (a): Home grown winter (fl. p. q.) . . . . .	3.70	5.75	6.05	6.05	5.65	5.59	4.89	5.33	4.40	5.87		

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From 1 Oct. 1933: minimum prices at the farm (fixed according to the law of 26 Sept.) increased with transport costs from farm to station. — 3) August 1931-Jan. 1932: 79 kg. p. hl.; Feb.-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From 15 July 1933: minimum prices fixed in the Wheat law. — 5) From August prices at the farm. — 6) August-Nov. 1931: 63 lb. p. bushel; Dec. 1931: 63 1/2 lb. Jan.-Dec. 1932: 64 lb.; afterwards: 63 1/2 lb. — 7) From November 1932: 72-73 kg. p. hl. — 8) From 1 Sept. 1933: spring barley, average quality. — 9) On sample. — 10) Shipping Jan.-Febr.

PRODUCTS, MARKETS AND DESCRIPTION	AVERAGE 1)									
	20	13	6	29	22					
	Oct.	Oct.	Oct.	Sept.	Sept.	Sept.	Oct.	Oct.	Commercial Season	
	1933	1933	1933	1933	1933	1933	1932	1931	1932-33	1931-32
<b>OATS.</b>										
Braila: Good quality (lei p. quintal) . .	n. 132	n. 130	n. 130	n. 137	162	149	n. 202	258	n. 195	285
Winnipeg: No. 2 White (cents per 34 lb.)	29 1/4	26	29 1/4	30 1/4	32 1/4	33 1/4	23 1/4	31 1/4	26 1/4	31 1/4
Chicago: No. 2 White (cents per 32 lb.)	32	30 1/4	32 1/4	36 1/4	35 1/4	36 1/4	15 1/4	24 1/4	21 1/4	24 1/4
Buenos Aires a): Current quality (pesos paper p. quintal) . . . . .	3.45	3.65	3.70	3.70	3.90	3.82	5.11	6.57	4.43	5.33
Berlin: Home grown (Rm. p. quint.) . .	14.00	14.20	14.20	14.20	14.00	13.62	13.56	14.33	13.05	15.10
Paris: Home grown, black and other (frances p. quintal) . . . . .	51.15	49.15	49.75	50.00	50.50	51.35	86.85	89.20	76.30	101.75
London: Home grown white (sh. p. 336 lb.)	17/-	17/-	17/-	17/-	16/6	16/4 1/2	18/9	20/-	18/6	21/3
London and Liverpool c. i. f., parcels (shillings p. 320 lb.):										
German (on sample) . . . . .	13/-	12/9	12/9	13/-	13/-	12/7 1/2	n. q.	n. q.	n. q.	n. q.
Danubian (39-40 lb. p. bush.) 3) . .	10/3	10/6	10/6	10/4 1/2	10/9	10/9 1/2	14/5	n. q.	n. 14/3	n. q.
Plate (f. a. q.) . . . . .	11/6	11/4 1/2	11/6	11/6	11/10 1/2	11/7 1/2	14/5	15/4	12/9	14/5
Chilian Tawny . . . . .	10/-	10/9	10/9	11/10 1/2	12/-	11/11 1/2	n. q.	n. q.	n. q.	n. 16/-
Milan (b), (lire p. quintal):										
Home grown . . . . .	50.00	50.00	50.00	50.00	48.00	49.60	67.50	71.40	62.80	73.60
Foreign imported . . . . .	47.50	47.50	47.50	48.00	48.00	48.60	63.30	64.90	57.10	65.20
<b>MAIZE</b>										
Braila: Danubian (lei p. quintal) . .	n. 170	155	160	180	180	171	n. 170	144	187	210
Chicago: No. 2 Mixed Amer. (cents p. 56 lb.)	39 1/4	36 1/4	39 1/2	46 1/2	46	48	25 1/4	39 1/4	34	58 1/4
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	3.37 1/2	3.45	3.60	3.67 1/2	3.75	3.79	4.52	4.25	4.63	3.82
Antwerp, (frances p. quintal):										
Bessarabian . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	60.50	n. q.	71.25
Yellow Plate . . . . .	42.50	43.00	43.50	44.00	43.50	43.50	55.10	50.00	57.20	65.00
Argentine Cinquintino . . . . .	48.50	47.50	47.50	48.50	49.50	50.20	61.00	52.50	63.80	81.00
London and Liverpool, parcels, c. i. f. (shillings p. 480 lb.):										
Danubian . . . . .	n. q.	n. q.	16/1 1/2	16/9	16/9	16/7	18/7	n. 17/4	n. 19/3	n. 17/4
Yellow Plate . . . . .	14/6	14/6	15/4 1/2	15/6	15/9	15/8	17/11	15/5	18/2	15/6
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	19/6	19/11	n. 20/11	n. 18/1
Milan (b) Home grown (lire p. quintal) .	45.00	44.00	46.00	48.00	48.00	48.60	57.00	56.80	68.70	51.90
<b>RICE (CLEANED).</b>										
Milan (b), lire p. quintal):										
Vialone (Camolino) . . . . .	172.50	175.00	177.00	183.00	185.00	194.60	176.50	155.00	181.15	145.90
Maratelli (Camolino) . . . . .	125.00	120.50	120.50	123.00	127.00	132.00	140.30	129.40	151.25	117.35
Originario (Raffinato) . . . . .	82.00	83.50	83.50	90.50	91.50	93.50	115.40	100.75	121.40	103.20
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	182 1/2	185	180	180	180	181 1/2	240	276	268 1/4	249 1/4
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white (25 % broken) . .	...	...	...	3.74	3.87	4.02	4.67	6.44	5.48	6.73
No. 2 Japan (40 % broken) . . . . .	...	...	...	3.58	3.71	3.85	4.39	6.03	5.11	6.20
London (a), c. i. f. (shillings p. 122 lb.):										
No. 3 Spanish Belloch, oiled . . . . .	13/6	13/6	13/6	12/6	12/6	12/6	13/6	12/11	13/8	11/11
No. 6 Italian good, oiled . . . . .	9/4 1/2	9/7 1/2	9/4 1/2	9/9	10/1 1/2	10/4 1/2	12/8	n. q.	14/-	13/7
American Blue Rose . . . . .	20/6	19/-	19/6	19/6	20/-	20/9	17/-	18/6	17/1	18/7
No. 2 Burma . . . . .	6/3	6 4/4	6/3	6/4 1/4	6/3	6/4 1/4	7/9	8/6	8/4	7/11
No. 1 Saigon . . . . .	6/7 1/2	6/9	7/-	7/-	7/-	7/1 1/2	7/9	8/9	8/5	8/1
Siam special 4) . . . . .	7/10 1/2	7/10 1/2	8/1 1/2	8/1 1/2	8/1 1/2	8/1 1/2	8/7	11/5	9/4 1/2	9/5
Tokio: Chumal (brown Japanese, average quality; yens p. koku) . . . . .	20.70	20.80	20.50	20.80	20.80	20.70	18.32	17.28	21.20	18.46
<b>LINSEED.</b>										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	9.70	9.75	10.20	10.45	11.15	11.32	9.45	11.43	9.22	10.82
Antwerp: Plate (frances p. quintal) . .	103.00	109.50	112.50	115.00	120.00	121.10	104.35	120.00	103.25	146.00
London, c. i. f. (£ p. long ton):										
Plate (delivery Hull) . . . . .	9-12-6	9-12-6	10-5-0	10-0-0	10-2-6	10-11-9	8-15-7	8-17-6	8-8-4	8-14-1
Bombay bold . . . . .	10-18-9	10-17-6	11-5-0	11-8-9	11-12-6	11-16-0	11-16-3	11-8-0	11-10-0	11-9-6
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.) . .	174 1/4	168	178	185	187	184 1/4	108 1/2	129 1/4	118 1/4	148

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From August: prices paid at the farm. — 3) From 18 Aug. 1933: 35-36 lb. p. bush; 5 1/2 % dirt. — 4) Before January 1932: No. 1 Garden Siam. — 5) Shipping Nov. — 6) New crop. — 7) Shipping Nov.-Dec. — 8) Shipping Oct.-Nov. — 9) 15 Sept. 1932: 8 and 1 Sept. 1933: 25 and 18 Aug. 1932: 11 Aug. 200; 4 Aug. 195; aver. Aug. 195; 28 July 197 1/2; 21 July 205; 14 July 207 1/2; 7 July 202 1/2; aver. July 203; 30 and 23 June 200; aver. June 199 1/2. — 10) 15 Sept. 4.23; 8 Sept. 4.18; 1 Sept. 4.07. — 11) 15 Sept. 4.07; 8 Sept. 4.02; 1 Sept. 3.87. — 12) December.

PRODUCTS, MARKETS AND DESCRIPTION	20 Oct. 1933	13 Oct. 1933	6 Oct. 1933	29 Sept. 1933	22 Sept. 1933	AVERAGE 1)					
						Sept. 1933	Oct. 1932	Oct. 1931	Commercial Season		
									1931-32	1930-31	
<b>COTTONSEED.</b>											
Alexandria: Sakellaridis (piastres p. ardeb)	36.5	35.1	38.7 <sup>a)</sup>	46.0 <sup>a)</sup>	47.6 <sup>a)</sup>	48.1	65.2	57.6	60.0	52.2	
London: Sakellaridis (delivery Hull; 1' p. long ton).	4-3-9	4-0-0	4-6-3 <sup>a)</sup>	4-13-9 <sup>a)</sup>	4-16-3 <sup>a)</sup>	4-17-0	6-9-8	6-4-9	6-3-7	5-12-6	
<b>COTTON.</b>											
New Orleans: Middling (cents p. lb.) . .	9.15	8.98	9.19	9.64	9.60	9.29	6.50	6.05	7.27	6.20	
New York: Middling (cents p. lb.) . . .	9.40	9.35	9.50	9.90	9.80	9.55	6.56	6.28	7.38	6.35	
Bombay: M.g. Broach f.g. (rupees p. 784 lb.)	189	189	192	199	199	<sup>a)</sup> 199 1/2	208 1/2	170 1/2	201 1/2	181 1/2	
Alexandria (talaris p. kantar):											
Sakellaridis f. g. f. . . . .	12.40	12.60	12.60	12.80	12.75	12.86	14.47	12.85	14.15	12.10	
Ashmuni-Zagora f. g. f. . . . .	10.47	10.57	10.72	10.87	10.82	11.05	12.73	9.03	12.46	9.69	
Bremen: Middling (U. S. cents p. lb.) . .	10.47	10.71	10.97	11.28	11.02	10.80	7.75	7.24	8.54	7.44	
M. g. Broach fully good (pence p. lb.) .	n. 4.15	n. 4.35	n. 4.50	n. 4.80	n. 4.75	n. 4.72	n. 5.04	n. 3.85	n. 4.81	n. 4.46	
Le Havre: Middling, Gulf (francs p. 50 kg.)	219.00	209.00	209.00	216.00	207.00	213.20	234.00	201.00	233.75	216.00	
Liverpool (pence per lb.):											
Middling fair. . . . .	n. 6.61	n. 6.59	n. 6.59	n. 6.75	n. 6.62	n. 6.68	n. 6.74	n. 5.84	n. 6.76	n. 5.85	
Middling. . . . .	5.51	5.44	5.44	5.60	5.42	5.49	5.59	4.72	5.61	4.79	
São Paulo, g. f. . . . .	5.81	5.79	5.79	5.95	5.82	5.85	5.84	4.84	5.87	4.98	
M. g. Broach, f. g. . . . .	n. 4.40	n. 4.39	n. 4.41	n. 4.58	n. 4.48	n. 4.46	n. 5.10	n. 4.12	n. 5.01	n. 4.34	
Sakellaridis, f. g. f. . . . .	7.05	7.16	7.22	7.39	7.28	7.35	7.99	7.16	7.77	6.76	
<b>BUTTER.</b>											
Copenhagen (a) Danish (Crs. p. quint.) . .	208.00	184.00	180.00	192.00	204.00	201.00	183.50	213.00	178.70	209.00	
Leeuwarden, Commission for the Dutch butter quotations (a) (florins p. kg.) . .	0.71	0.66	0.65	0.65	0.68	0.65	0.82	1.24	0.94	1.34	
Zutphen, auction: Dutch (fl. p. kg.) 2) . .	1.65	1.60	1.60	1.59	1.61	1.64	1.52	1.24	1.27	1.38	
Hamburg, auction (b): Schleswig-Holstein butter, with qual. mark (Rm. p. 50 kg.) .	128.78	128.54	128.42	128.04	128.76	128.07	119.87	130.17	115.83	131.22	
Kempten (b): Allgäu butter (Rpf. p. 1/2 kg.) 3)	123	123	123	123	123	122 1/4	101 1/2	100 1/2	107	110	
London (c) (shillings p. cwt.):											
British blended. . . . .	121/4	121/4	121/4	121/4	121/4	119/7	133/-	142/2	131/6	140/4	
Danish . . . . .	112/-	112/-	116/-	121/-	121/-	116/9	123/9	137/9	123/2	133/4	
Irish creamery, salted . . . . .	n. a.	n. a.	n. a.	n. a.	n. a.	110/-	105/4	113/6	n. 111/-	119/5	
Dutch . . . . .	115/-	115/-	115/-	120/-	114/-	114/9	116/-	137/9	n. 115/10	132/1	
Argentine . . . . .	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	99/-	120/9	103/9	117/7	
Siberian 4) . . . . .	88/-	90/-	92/-	94/-	89/-	87/6	95/-	n. a.	n. 93/3	n. a.	
Australian, salted . . . . .	106/-	108/-	110/-	114/-	109/-	106/6	109/3	120/9	107/7	116/8	
New Zealand, salted . . . . .	108/-	110/-	110/-	114/-	109/-	107/-	119/6	127/9	109/10	119/11	
<b>CHEESE.</b>											
Milan (lire p. quintal):											
Parmigiano-Reggiano, 1st quality, last year's production . . . . .	865.00	865.00	865.00	865.00	865.00	865.00	959.00	975.00	1,016.00	1,103.00	
Green Gorgonzola, mature, choice . . .	425.00	425.00	425.00	425.00	425.00	423.00	610.60	616.25	512.70	616.00	
Rome: Roman pecorino, choice, (lire p. q.)	837.50	875.00	875.00	875.00	875.00	915.00	1,275.00	1,151.00	1,251.00	1,121.00	
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . .	21.50	21.50	21.00	22.00	20.00	20.60	27.00	29.50	24.41	32.63	
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.) . . . . .	26.50	27.00	27.50	26.50	26.00	26.00	31.50	37.30	26.92	37.93	
Kempten (b): (Rpf. p. 1/2 kg.):											
Soft cheese, green (20 % butterfat) . .	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	22 1/2	25	21	24	
Emmenthal from the Allgäu (whole milk cheese) 1st quality . . . . .	71	71	71	71	71	71	77 1/2	98	81 1/2	97 1/2	
London (c) (shillings p. cwt.):											
English Cheddar . . . . .	96/-	96/-	96/-	98/-	98/-	98/-	100/6	89/9	109/-	99/10	
Canadian . . . . .	58/-	58/-	58/-	58/-	58/-	57/9	69/6	72/4	72/10	75/9	
New Zealand . . . . .	53/6	54/6	56/-	57/6	57/-	56/-	65/10	72/1	63/1	63/2	
Liverpool (c): English Cheshire, un- graded (sh. p. cwt.) . . . . .	98/-	98/-	98/-	98/-	102/8	93/5	96/10	91/11	103/10	94/3	

n. q. = not quoted. — n = nominal. — a) Thursday prices. — b) Wednesday prices. — c) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Before January 1933: quotations in January 1932; in June 1933 Maasricht; see note on page 425 of the *Crop Report of June*. — 3) The method of quotation was changed in January 1932; in June 1933 another change has occurred; see note on page 425 of the *Crop Report of June*. — 4) September 1932-January 1933 and July - 6 Sept. 1933: Russian. — 5) Quality: "Upper Egypt". — 6) New crop, shipping Oct. — 7) 15 September: 201; 8 September: 194; 1 September: 203; 25 August: 205; 18 August: 182; 11 August: 189; 4 August: 207; average August: 195 1/4; 28 July: 211; 21 July: 209; 14 July: 215; 7 July: 212; average July: 211; 30 June: 212; 23 June: 206; average June: 210 1/2.

## QUARTERLY REVIEW OF PRICES 1)

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year 2)	
		Sept.	Aug.	July	April-June	July-Sept.	July-Sept.		1932-33	1931-32
		1933	1933	1933	1933	1932	1931			

## GERMANY (Prices in Reichsmarks per quintal)

A I	*Wheat (Berlin) . . . . .	17.82	17.42	18.73	19.49	21.96	22.19	20.03	23.64
	*Rye (Berlin) . . . . .	14.32	14.12	15.12	15.45	16.72	17.56	15.77	19.02
	*Barley, feeding (Berlin) . . . . .	15.27	n. q.	16.25	16.87	16.54	15.55	16.37	16.35
	*Oats (Berlin) . . . . .	13.62	13.70	13.79	13.29	14.85	14.77	13.25	15.07
	*Red potatoes (Berlin) . . . . .	2.06	n. q.	n. q.	2.70	2.82	2.88	2.67	3.57
A II	*Milk, fresh (Berlin) . . . . .	13.85	13.85	13.85	13.85	13.80	16.72	13.84	15.06
	*Butter (Hamburg) . . . . .	256.14	246.08	229.22	209.65	217.40	260.98	212.92	245.35
	*Cheese, Emmenthal variety (Kempten) . . . . .	142.00	143.25	144.00	145.50	164.50	200.00	153.00	180.10
	*Beef, live weight (Berlin) . . . . .	62.40	70.40	70.40	63.13	73.03	89.73	64.42	76.06
	*Veal, live weight (Berlin) . . . . .	75.20	76.00	62.00	71.07	78.43	97.00	71.36	81.87
	*Pork, (220-265 lb.), live weight (Berlin) . . . . .	92.60	84.80	73.00	66.87	87.67	105.80	77.40	87.75
	*Fresh eggs (Berlin) (per 100) . . . . .	10.61	9.94	9.05	8.89	8.43	11.15	9.95	10.12
B I	Basic slag (Aachen) 3). . . . .	0.265	0.265	0.265	0.243	0.225	0.250	0.240	0.230
	§ Superphosphate of lime 18 % (Hildesheim) 3) . . . . .	0.310	0.310	0.306 <sup>*)</sup>	0.304	0.310	0.336	0.308	0.319
	§ Potash salts 38-42 % (mine stations) 3). . . . .	0.168	0.168	0.166	0.163	0.168	0.152	0.168	0.159
	Sulphate of Ammonia 3). . . . .	n. 0.760	n. 0.760	n. 0.760	0.760	0.690	0.680	0.726	0.73
	Nitrate of lime 3) . . . . .	n. 0.990	n. 0.990	n. 0.990	0.990	0.920	0.950	0.952	0.98
B II	Wheat bran (Hamburg) . . . . .	9.88	8.89	8.87	8.37	10.05	10.59	8.74	9.86
	Linseed cake (Hamburg) . . . . .	16.25	15.00	14.75	11.72	10.32	13.45	10.68	12.23
	Coconut cake (Hamburg) . . . . .	16.01	14.70	15.05	12.48	10.36	11.88	10.91	11.30
	Groundnut cake (Hamburg) . . . . .	15.62	14.90	14.84	11.78	11.28	11.51	11.14	11.99
	Crushed soya extraction residue (Hamburg) . . . . .	13.80	13.65	13.36	10.12	10.67	11.95	10.03	11.26

## DENMARK (Prices in Danish crowns per quintal)

A I	Wheat (Copenhagen) . . . . .	n. q.	12.70	14.70	12.79	n. 11.25	n. 12.12	11.65	11.92
	Barley (Copenhagen) . . . . .	n. q.	11.75	12.70	12.29	n. 12.50	n. 11.00	11.89	13.13
	Oats (Copenhagen) . . . . .	n. 12.00	11.90	12.35	11.45	11.95	12.53	11.30	12.87
A II	*Butter (Copenhagen) . . . . .	201.00	177.20	157.25	151.17	174.50	200.00	168.20	192.50
	*Eggs . . . . .	124.00	94.50	70.00	67.90	99.00	97.00	105.47	98.00
	*Pork, live weight . . . . .	142.00	135.60	125.00	128.97	84.40	84.00	96.89	73.00
B I	Superphosphate 18 % . . . . .	5.95	5.95	6.50	6.50	5.35	5.37	5.94	5.65
	Potash salts 40 % . . . . .	12.95	13.03	13.65	13.65	13.28	11.95	13.51	12.98
	Sulphate of ammonia . . . . .	14.55	14.53	14.70	14.70	12.63	11.87	13.85	12.18
	Nitrate of lime, Norwegian . . . . .	14.40	14.28	14.55	14.55	13.15	14.23	13.92	13.73
	Rye, imported (Jutland) . . . . .	9.36	9.11	10.39	10.05	9.69	7.45	9.68	10.31
	Maize, Plate (Jutland) . . . . .	10.80	10.15	10.16	9.94	9.53	7.00	9.75	8.64
B II	Wheat bran, Danish (Copenhagen) . . . . .	10.22	9.74	9.47	8.96	9.47	n. 7.69	n. 9.20	9.26
	Cottonseed cake (Copenhagen) . . . . .	13.50	13.70	13.77	12.97	12.82	11.18	13.09	12.18
	Sunflower-seed cake (Copenhagen) . . . . .	13.85	13.88	14.07	13.32	12.24	11.15	13.21	11.50
	Groundnut cake (Copenhagen) . . . . .	14.25	14.20	14.72	14.31	14.92	11.59	15.02	13.99
	Crushed soya extraction residue (Copenhagen) . . . . .	13.55	13.78	14.42	14.06	14.23	11.46	14.53	12.94

\*) Indicates that the series is published also in the *Intern. Yearbook of Agricultural Statistics*, and used in the table of average monthly prices in gold francs per quintal. — §) Indicates that the series is published in the *Intern. Yearbook of Agricultural Statistics*.

1) Each quarter a list is published for several countries containing prices of plant (A I) and animal (A II) products sold by the farmer, as well as of fertilizers (B I) and of concentrated feeding stuffs for livestock (B II) bought by the farmer. — In the case where the market is not indicated, the price is the average one for the country. — The prices paid to farmers for sugar beet are generally fixed once a year and therefore are not inserted in these tables. — 2) July to June. — 3) Prices per unit of fertilizer material in a metric quintal. — 4) September. — 5) June: 0.306; May: 0.297; January-April: 0.310. — 6) June: 13.50; May: 12.72; April: 12.15.



GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		Sept.	Aug.	July	April- June	July- Sept.	July- Sept.	1932-33	1931-32	
		1933	1933	1933	1933	1932	1931			
FRANCE (Prices in francs per quintal)										
A I	*Wheat (Paris) . . . . .	n. 116.50	n. 115.00	n. 110.80	97.55	134.00	165.85	112.50	167.75	
	Rye (Paris) . . . . .	68.00	67.00	78.00	81.35	82.00	91.00	80.15	99.65	
	Malting barley (Paris) . . . . .	81.00	77.00	80.00	81.00	82.65	90.50	84.40	96.25	
	*Oats (Paris) . . . . .	51.35	53.60	60.45	66.00	94.60	84.80	80.75	99.35	
	§Wine, red, 10° (Montpellier) (hectol.) . . . . .	1) 78.35	76.00	86.25	103.60	143.90	155.00	—	n. 110.00	
A II	*Beef, dead weight (Paris) . . . . .	550.00	553.00	529.00	555.00	673.00	931.00	607.00	783.00	
	*Pork, live weight (Paris) . . . . .	606.00	610.00	629.00	654.00	708.00	647.00	700.00	593.00	
	*Mutton, dead weight (Paris) . . . . .	995.00	993.00	1,038.00	1,114.00	1,060.00	1,329.00	1,096.00	1,123.00	
B I	§Basic slag, 18 % (Thionville) . . . . .	22.50	22.50	22.50	22.50	23.40	23.40	22.70	23.40	
	§Superphosphate 14 % (North and East) . . . . .	27.25	27.25	27.25	27.25	26.35	29.05	26.30	27.75	
	§Sylvinite, minimum 12 % . . . . .	4) 16.30	16.30	10.60	10.60	10.60	10.60	10.60	10.60	
	Nitrate of soda (Dunkirk) . . . . .	85.75	84.70	88.00	92.40	92.50	102.00	92.25	101.25	
	Sulphate of ammonia 20.4 % . . . . .	89.55	86.30	86.30	94.00	94.85	103.25	94.30	101.85	
B II	Linseed cake (North) . . . . .	63.25	64.00	—	61.65	70.75	87.00	68.30	80.00	
	Coconut cake (Marseilles) . . . . .	60.00	60.00	60.00	64.00	67.00	73.00	66.35	70.00	
	Groundnut cake (Marseilles) . . . . .	55.00	55.00	55.00	56.65	72.00	80.00	66.25	78.75	

## GREAT BRITAIN (A: Prices in shillings and pence per cwt;

## B: Prices in pounds sterling, etc. per long ton)

A I	Wheat . . . . .	4/9 3/4	5/9	6/7 1/2	5/8 1/2	6/2 1/2	5/9 3/4	5/7 3/4	6/-
	Fodder barley . . . . .	10/9 1/2	9/6	6/7 1/2	6/7 1/2	7/6 9/4	7/10 1/4	7/1	8/1
	Oats . . . . .	5/3 9/4	5/6 1/4	5/9 3/4	5/9	7/3 1/4	6/3 1/2	6/2 9/4	7/-
	§Potatoes (London) . . . . .	4/4 1/2	5/1 1/4	n. q.	4/7 1/2	n. 6/8 1/2	n. 5/1	4/10 1/4	9/10
A II	†Butter (London) . . . . .	119/7	113/10	107/4	113/7	134/5	140/-	123/1	136/-
	*Cheese, Cheddar (London) . . . . .	98/-	100/4	102/-	99/2	97/2	97/10	100/8	109/-
	*Beef, dead weight (London) . . . . .	60/8	65/4	66/6	68/3	71/9	89/4	70/-	76/-
	*Mutton, dead weight (London) . . . . .	74/8	73/7	81/8	92/3	65/11	99/7	79/2	84/2
	*Pork, dead weight (London) . . . . .	85/2	71/2	63/7	71/7	65/4	75/10	71/4	74/4
B I	§Basic slag 14 % (London) . . . . .	2- 3-0	2- 3-0	2- 3-0	2- 3-0	2- 3-0	2- 1-0	2- 3-0	2- 1-6
	Superphosphate, 16 % (London) . . . . .	2-16-0	2-16-0	2-16-0	2-16-0	2-16-2	2-19-0	2-16-0	2-17-2
	Kainit 14 % (London) . . . . .	3- 0-0	3- 7-0	3- 7-0	3- 7-0	3- 2-6	2-18-11	3- 5-4	3- 3-0
	§Nitrate of soda, 15 % (London) . . . . .	7- 8-0	7-15-0	8-16-0	8-16-0	8-16-0	8-19-0	8-14-4	8-17-6
	§Sulphate of ammonia 20.6 % (London) . . . . .	6-15-0	6-15-0	6-15-0	6-10-0	5- 5-0	7- 0-10	5-18-8	6-15-11
B II	Bran, British (London) . . . . .	5- 8-9	4-14-2	4-11-0	4- 7-9	5-16-7	4-14-7	5- 7-10	5-14-10
	Bran, middlings, imported (London) . . . . .	4-17-0	4-10-5	4-10-0	4-10-2	5-18-7	4-12-2	5- 4-7	5-11-9
	Linseed cake, English (London) . . . . .	8-17-0	8-17-0	8-17-0	8-14-2	8-11-9	8- 5-6	8-12-0	8-11-3
	Cottonseed cake (London) . . . . .	4-18-6	5- 1-7	5- 7-9	5-19-6	5-10-4	4-12-1	5-14-7	5- 2-6
	Palm kernel cake (Liverpool) . . . . .	5-17-0	5-18-10	6- 0-0	6- 2-8	6- 1-10	6- 0-0	6- 2-0	6-11-2

## ITALY (Prices in lire per quintal)

A I	*Wheat, soft (Milan) . . . . .	82.60	83.85	85.10	94.80	100.45	91.25	102.95	105.65
	Wheat, hard (Palermo) . . . . .	102.00	105.00	111.00	113.65	118.00	128.00	120.00	133.00
	†Oats (Milan) . . . . .	49.60	47.35	51.40	56.05	67.85	67.40	64.40	73.30
	*Maize (Milan) . . . . .	48.60	48.00	50.00	49.25	71.40	52.75	58.35	64.00
	Rice, Maratelli (Milan) . . . . .	132.00	140.75	169.00	144.75	162.15	102.75	146.15	135.40
	Hemp, fibre . . . . .	—	265.00	263.00	264.00	220.00	215.00	256.00	217.00
	§Olive oil "Soprafino locale" (Bari) . . . . .	390.00	390.00	405.00	391.00	465.00	577.00	425.00	518.00
	§Wine, ordinary, 11° to 13° (Bari) (hectol.) . . . . .	65.00	63.00	65.00	65.00	80.00	96.00	72.00	86.00

\*) Indicates that the series is published also in the *Intern. Yearbook of Agricultural Statistics* and used in the table of average monthly prices in gold francs per quintal. — §) Indicates that the series is also published in the *Intern. Yearbook of Agricultural Statistics*. — †) Indicates that the series is published also in the *Monthly Review of Prices of this Crop Report*.

1) 8°. 5. — 2) 10°. 5. — 3) April: 703.00 — 4) Rich sylvinit, 18 %. — 5) June: 265.00

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		Sept.	Aug.	July	April- June	July- Sept.	July- Sept.	1932-33	1931-32	
		1933	1933	1933	1933	1932	1931			
ITALY (continued)										
A II	*Cheese (Parmigiano-Reggiano) (Milan) . . . . .	865.00	1,050.00	1,050.00	1,050.00	1,050.00	1,128.00	1,023.00	1,026.00	
	Eggs, fresh (Milan) (per 100) . . . . .	41.90	38.75	30.80	29.70	36.00	39.65	39.45	40.25	
	Beef, live weight (Milan) . . . . .	263.00	253.00	250.00	256.00	280.00	338.00	274.00	321.00	
	Pork, live weight (Milan) . . . . .	408.00	410.00	420.00	434.65	383.00	373.00	419.00	363.00	
B I	Basic slag, 16-20 % (Chiasso 1) 2) . . . . .	0.795	0.774	0.912	0.960	1.338	1.100	—	1.06	
	Superphosphate, mineral, 15-17 % (Genoa) 1) . . . . .	1.130	1.130	1.179	1.195	1.195	1.170	1.195	1.19	
	Chloride of potassium (Genoa) . . . . .	62.50	62.50	66.25	66.35	64.55	75.85	65.95	72.00	
	Sulphate of ammonia (Genoa) . . . . .	73.70	72.75	81.00	80.60	75.60	71.40	78.05	75.40	
	Copper sulphate (Genoa) . . . . .	n. q.	n. q.	112.10	104.70	112.35	103.00	103.60	133.65	
B II	Wheat bran (Genoa) . . . . .	34.90	26.25	21.50	24.40	37.75	49.00	31.15	49.30	
	Rice bran (Milan) . . . . .	22.50	18.75	17.50	25.75	40.00	38.00	34.65	41.70	
	Linseed cake (Milan) . . . . .	42.70	38.25	38.10	39.80	54.10	60.00	48.95	62.15	
	Groundnut cake (Milan) . . . . .	39.10	36.50	36.50	39.45	53.10	52.00	48.60	55.15	
	Rapeseed cake (Milan) . . . . .	21.50	21.50	21.50	21.30	26.50	33.00	25.00	33.30	

## NETHERLANDS (Prices in guilders per quintal)

A I	Wheat (Groningen) 3) . . . . .	n. q.	n. q.	n. q.	n. 15.00	—	n. 12.50	—	n. 12.50	
	†Rye (Groningen) . . . . .	3.29	3.12	3.70	3.76	4.83	4.39	4.07	5.02	
	†Barley (Groningen) . . . . .	5.59	4.42	3.65	3.79	4.45	5.25	4.60	5.80	
	Oats (Groningen) . . . . .	4.88	n. 4.00	3.52	3.60	5.20	5.45	4.29	5.76	
	Peas (Rotterdam) . . . . .	10.44	9.27	n. q.	10.25	11.98	9.81	n. 11.69	11.40	
	Flax, fibre (Rotterdam) . . . . .	47.50	50.00	47.50	49.67	48.00	52.00	48.95	52.55	
	§Potatoes (Amsterdam) . . . . .	5.00	3.60	n. q.	1.77	n. 3.50	n. 5.50	2.46	3.97	
A II	*Butter for export (Leeuwarden) . . . . .	65.00	63.00	54.00	52.67	85.35	129.00	70.00	115.00	
	†Butter for home consumption (Zutphen) 4) . . . . .	164.00	166.00	158.00	154.75	133.65	133.00	—	118.00	
	†Cheese, Gouda 45 % (Gouda) . . . . .	52.00	48.50	50.50	51.88	50.85	81.35	27.86	62.88	
	*Cheese, Edam 40 % (Alkmaar) . . . . .	21.20	40.00	39.00	45.71	41.90	73.47	23.84	56.26	
	*Eggs (Roermond) (per 100) . . . . .	3.12	3.07	2.27	2.09	3.79	5.40	3.80	4.52	
	Beef, dead weight (Rotterdam) . . . . .	56.50	56.00	56.00	56.00	66.67	89.20	60.96	76.70	
	*Pork, live weight (Rotterdam) . . . . .	39.00	33.50	33.00	32.17	28.83	43.15	30.29	35.35	
B I	Basic slag 1) . . . . .	n. 0.126	n. 0.129	0.124	n. 0.108	0.116	0.113	0.125	0.097	
	Superphosphate, 17 % . . . . .	n. 1.92	n. 1.92	1.93	n. 1.95	1.90	2.43	1.94	2.15	
	Kainit 1) . . . . .	0.141	0.140	0.087	0.146	0.144	0.136	0.145	0.144	
	Nitrate of soda . . . . .	6.03	6.00	6.60	6.73	6.71	n. 8.15	6.67	7.82	
	Sulphate of ammonia, 20 ½ % . . . . .	4.73	4.59	4.79	4.79	4.38	4.63	4.62	4.45	
B II	Maize (Rotterdam) . . . . .	4.06	3.82	3.26	3.47	3.95	3.86	3.66	3.89	
	Linseed cake, Dutch . . . . .	6.20	6.15	6.15	5.76	6.00	7.45	5.90	6.85	
	Coconut cake . . . . .	5.44	5.57	5.70	5.73	6.28	7.85	6.06	6.81	
	Groundnut cake . . . . .	5.00	5.31	5.50	5.60	6.57	6.98	6.19	7.20	

## POLAND (Prices in zlotys per quintal)

A I	Wheat (Warsaw) . . . . .	21.98	20.32	39.63	37.80	26.40	25.86	30.46	27.48	
	§Rye (Warsaw) . . . . .	14.38	15.11	21.26	19.58	18.30	22.74	17.93	25.56	
	Barley (Warsaw) . . . . .	15.75	n. q.	n. q.	n. 16.30	18.20	22.13	17.14	24.42	
	Oats (Warsaw) . . . . .	14.29	14.34	18.10	15.20	19.30	24.56	16.66	24.36	
A II	Butter (Warsaw) . . . . .	327.00	324.00	256.00	320.00	334.00	407.00	336.00	397.00	
	Beef, live weight (Warsaw) . . . . .	64.75	62.10	61.00	68.30	75.65	83.00	67.30	77.55	
	Pork, live weight (Warsaw) . . . . .	114.75	112.10	102.25	115.70	113.70	167.00	108.00	124.30	
	*Eggs (Warsaw) (per 100) . . . . .	7.64	7.22	6.51	6.14	7.82	9.68	9.36	10.87	
B I	Superphosphate . . . . .	0.62	0.62	0.62	0.62	0.62	0.77	0.62	0.55	
	Potash salts, 25 % . . . . .	10.50	11.50	10.75	11.37	13.75	13.75	12.91	13.75	
	Sulphate of ammonia . . . . .	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	
B II	Wheat bran (Warsaw) . . . . .	9.45	11.06	13.25	10.32	12.38	14.75	10.78	15.62	
	Rye bran (Warsaw) . . . . .	7.95	8.06	11.25	10.40	10.37	13.48	9.82	15.03	
	Linseed cake (Warsaw) . . . . .	16.55	18.06	18.50	19.00	20.00	n. q.	19.96	24.77	
	Rapeseed cake (Warsaw) . . . . .	13.30	13.87	14.25	14.32	16.45	17.75	15.67	18.71	

\* Indicates that the series is published also in the *Intern. Yearbook of Agricultural Statistics* and used in the table of average monthly prices in gold francs per quintal. — §) Indicates that the series is also published in the *International Yearbook of Agricultural Statistics*. —

†) Indicates that the series is published also in the *Monthly Review of Prices of this Crop Report*.

1) Prices per unit of fertilizer material in a metric quintal. — 2) From February 1933: prices at the manufacturing plants abroad. —

3) See note on wheat prices in the Netherlands (page 75 of the *Crop Report* of January). — 4) Before January 1933: quotation in Maastricht; see note on page 425 of the *Crop Report* of June.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							
		Sept.	Aug.	July	April-	July-	July-	Agricultural year	
		1933	1933	1933	June 1933	Sept. 1932	Sept. 1931	1932-33	1931-32

## SWEDEN (Prices in Swedish crowns per quintal)

A I	Wheat (Stockholm) . . . . .	15.28	14.93	19.25	n. 18.65	17.07	18.82	17.46	17.84
	Rye (Stockholm) . . . . .	13.90	14.06	17.75	n. 17.15	15.26	16.42	15.94	16.14
	Barley (Stockholm) . . . . .	11.08	n. q.	n. q.	n. 10.00	11.98	12.97	11.07	12.36
	Oats (Stockholm) . . . . .	10.37	10.55	10.25	n. 8.70	n. 10.40	10.76	8.97	10.40
A II	Beef, live weight (Göteborg) . . . . .	34.50	34.10	31.60	31.00	34.70	45.00	32.30	38.65
	Pork, live weight (Göteborg) . . . . .	51.75	56.40	57.60	60.85	65.00	55.55	61.05	51.15
	Butter (Malmö) . . . . .	230.00	225.00	215.00	182.00	167.50	186.70	176.45	184.00
	Eggs (Stockholm) . . . . .	108.00	93.00	58.50	56.65	88.07	88.60	92.50	95.00
B I	Superphosphate, 20 % . . . . .	6.85	6.85	6.85	7.02	6.92	n. 7.07	6.79	7.36
	Potash salts, 20 % . . . . .	8.25	8.25	8.30	8.57	7.98	7.85	8.31	7.78
	Nitrate of soda . . . . .	18.95	18.95	18.95	18.95	n. q.	19.04	18.95	18.65
	Calcium cyanamide . . . . .	16.50	16.50	16.50	16.50	n. q.	18.10	16.50	16.47
B II	Maize, Plate . . . . .	8.90	9.00	9.37	9.16	10.09	7.61	9.57	9.12
	Wheat bran . . . . .	9.30	9.45	9.24	8.86	9.52	8.48	9.31	9.88
	Groundnut cake . . . . .	14.81	14.85	15.10	14.02	15.97	12.61	15.24	14.70
	Cottonseed cake . . . . .	12.85	12.95	13.22	11.62	11.94	n. 11.80	11.99	12.25
	Soya meal . . . . .	14.26	14.55	14.87	13.28	14.70	13.23	14.25	14.25

## CZECHOSLOVAKIA (Prices in Czech. crowns per quintal)

A I	Wheat . . . . .	135.00	165.00	165.00	159.65	150.15	147.00	154.20	148.00
	Rye . . . . .	78.00	81.50	86.00	85.65	120.00	148.00	99.35	145.70
	Barley . . . . .	87.50	99.50	99.50	87.00	90.65	135.00	84.50	116.50
	Oats . . . . .	73.50	81.00	74.00	74.00	89.85	140.00	78.90	119.90
	Edible potatoes . . . . .	27.00	33.50	22.00	26.00	35.00	61.00	29.00	34.60
	Hops . . . . .	5,460.00	3,860.00	4,434.00	3,746.00	858.00	517.00	2,106.00	559.00
A II	Butter . . . . .	2,000.00	1,750.00	1,650.00	1,767.00	2,242.00	2,283.00	1,977.00	2,158.00
	Fresh eggs (per 100) . . . . .	58.35	45.00	44.40	45.15	59.40	57.00	66.05	58.25
	Beef, dead weight . . . . .	850.00	725.00	675.00	683.00	758.00	950.00	775.00	844.00
	Veal, dead weight . . . . .	650.00	650.00	725.00	758.00	733.00	833.00	754.00	769.00
	Pork, dead weight . . . . .	900.00	950.00	987.50	950.00	1,025.00	942.00	1,031.00	914.00
B I	Basic slag, 15 % . . . . .	34.85	34.85	34.85	34.85	34.85	37.35	34.85	35.05
	Superphosphate, 16 to 18 % . . . . .	50.15	50.15	49.10	49.15	51.85	51.85	50.75	51.85
	Kainite, 14 % . . . . .	20.55	20.55	20.30	20.05	21.75	22.50	21.05	22.00
	Nitrate of soda . . . . .	n. q.	n. q.	n. q.	147.00	142.00	157.25	n. 147.00	149.75
	Sulphate of ammonia, 20 ½ % . . . . .	125.60	125.60	120.60	127.60	124.40	131.50	126.40	128.20
B II	Maize, imported . . . . .	67.25	67.25	67.25	65.60	65.15	66.00	67.20	64.10
	Wheat bran (Prague) . . . . .	60.40	61.10	62.50	61.00	78.25	76.00	60.70	77.25
	Rye bran (Prague) . . . . .	60.40	61.10	62.50	60.55	80.30	78.00	60.80	79.00
	Crushed soya (Prague) . . . . .	98.50	99.50	99.50	101.40	115.60	116.00	104.50	113.25
	Rapeseed cake (Prague) . . . . .	82.40	90.50	90.50	90.50	98.50	102.00	96.50	100.00
	Linseed cake (Prague) 1) . . . . .	92.50	93.50	93.50	93.05	125.15	127.00	111.80	123.00
	Groundnut cake (Prague) 2) . . . . .	97.50	98.50	98.50	95.90	129.90	123.00	114.35	122.00

1) From Dec. 1932: delivery at Lovosice. — 2) From Nov. 1932 until March 1933: delivery at Střekov.

## AVERAGE MONTHLY PRICES IN GOLD FRANCS PER QUINTAL \*)

PRODUCTS MARKETS AND DESCRIPTION	Sept. 1933	Aug. 1933	July 1933	June 1933	May 1933	April 1933	Sept. 1932	Sept. 1931	Year	
									1932	1931
<b>WHEAT</b>										
Winnipeg: No 1 Manitoba . . . . .	8.30	9.59	10.62	9.31	9.21	8.18	8.89	9.97	9.33	10.76
Chicago: No 2 Hard Winter . . . . .	11.13	12.68	13.52	12.16	11.94	11.49	10.26	9.62	10.06	12.73
Berlin: Home grown . . . . .	22.01	21.51	23.13	23.61	23.66	24.23	25.69	26.21	28.33	30.62
Paris: Home grown . . . . .	23.65	23.34	22.33	19.52	19.80	20.10	23.81	33.76	29.94	35.12
London and Liverpool:										
South Russian . . . . .	8.34	9.62	n. q.	n. q.	n. q.	n. q.	11.08	10.00	n. 10.63	11.55
No 3 Manitoba . . . . .	9.37	10.68	11.80	10.36	10.46	9.92	10.80	11.02	10.96	12.59
No 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11.49	10.51	n. 11.45	n. 11.96
Rosaffé . . . . .	8.00	8.96	9.96	8.98	8.85	8.29	11.18	9.83	10.43	11.26
Australian . . . . .	9.23	10.33	11.07	10.41	10.10	9.54	11.87	11.11	11.14	12.42
Milan: Home grown, soft . . . . .	22.55	22.89	23.23	24.23	25.56	26.68	27.66	25.73	29.30	27.32
<b>RYE</b>										
Berlin: Home grown . . . . .	17.69	17.44	18.67	18.92	18.56	19.23	19.88	22.17	22.06	22.43
Hamburg: La Plata . . . . .	6.61	7.21	8.02	7.18	7.14	7.21	8.41	n. q.	9.83	n. 10.16
Minneapolis: No 2 . . . . .	9.66	10.41	12.01	10.61	9.18	8.33	6.94	8.11	7.62	8.06
<b>BARLEY</b>										
Braila: Average quality . . . . .	4.03	4.46	5.36	5.18	5.08	4.99	6.35	5.86	7.67	7.58
Winnipeg: No 4 Western . . . . .	5.27	6.66	7.11	6.14	6.09	5.61	6.07	6.76	6.83	6.55
Berlin: Home grown fodder . . . . .	18.86	n. q.	20.07	20.71	20.51	20.67	20.93	18.87	20.70	22.66
Antwerp: Danubian . . . . .	6.10	7.08	7.72	7.54	7.63	7.39	9.00	10.11	10.39	10.68
London and Liverpool:										
Russian . . . . .	5.86	6.47	7.47	n. q.	n. q.	n. q.	8.63	n. 9.18	n. 9.21	n. 10.12
No 3 Canadian Western . . . . .	7.79	9.93	n. 9.13	8.47	8.41	8.03	9.41	n. 10.64	10.37	10.99
<b>OATS</b>										
Winnipeg: No 2 White . . . . .	7.36	8.92	8.88	7.15	7.27	6.70	7.88	9.03	8.69	9.37
Chicago: No 2 White . . . . .	8.78	9.94	10.33	9.28	7.95	7.79	6.34	8.52	7.46	10.01
Berlin: Home grown . . . . .	16.82	16.92	17.03	17.06	16.14	15.56	17.10	16.88	18.17	19.13
Paris: Home grown . . . . .	10.42	10.88	12.27	12.71	13.42	14.08	17.60	17.41	20.36	17.48
London and Liverpool: La Plata . . . . .	6.52	6.73	7.30	7.04	7.17	6.92	9.50	9.88	9.02	9.45
<b>MAIZE</b>										
Braila: Danubian . . . . .	5.30	5.02	5.30	4.68	4.68	4.68	6.14	5.33	5.75	6.32
Chicago: No 2 Mixed American . . . . .	6.58	7.72	8.21	7.50	7.55	6.71	6.17	8.98	6.40	10.79
Antwerp: Danubian . . . . .	n. q.	6.96	6.89	6.79	7.01	7.05	n. q.	9.46	n. q.	n. 10.32
London and Liverpool:										
Yellow Plate . . . . .	5.85	6.11	6.65	6.49	6.70	6.68	7.85	7.11	7.63	8.41
No 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	8.71	n. 9.75	n. 8.00	n. 10.11
Milan: Home grown . . . . .	13.27	13.10	13.65	13.61	13.76	12.38	15.16	16.24	18.14	14.15
<b>RICE</b>										
Milan: Originario . . . . .	25.53	26.48	28.45	27.28	25.73	26.20	34.51	24.73	32.29	28.00
Rangoon: No 2 Burma . . . . .	6.55	7.36	7.73	7.75	7.63	7.34	10.44	14.51	10.85	12.81
Saigon: No 1 Round white . . . . .	8.16	9.24	10.58	9.09	8.26	8.12	10.27	15.22	11.12	13.49
London:										
No 2 Burma . . . . .	10.17	11.30	11.83	11.79	11.03	11.90	14.60	19.33	14.88	18.15
No 1 Saigon . . . . .	11.40	12.31	13.38	12.26	11.32	11.05	14.16	20.27	15.07	18.65
Tokio: Chumai . . . . .	10.82	11.80	12.25	12.83	12.95	12.90	13.50	27.28	17.29	25.96

\*) As gold franc, the Swiss franc, which still represents the franc of the former Latin Monetary Union, has been adopted. In cases where the differences between the rates of exchange of the national currency considered and its parity with the Swiss franc did not during a given month reach  $2\frac{1}{2}\%$ , the monthly average has been reduced on the basis of parity; in the contrary cases the average rate of exchange for the month has been utilized. Finally, when considerable fluctuations in the exchanges in the course of a particular month render it necessary, each weekly quotation has first been reduced to gold francs and the average of these reductions calculated.

1) Russian.

PRODUCTS MARKETS AND DESCRIPTION	Sept.	Aug.	July	June	May	April	Sept.	Sept.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>COTTON</b>										
New Orleans: Middling . . . . .	71.28	79.09	86.50	87.46	84.19	74.65	87.19	71.07	72.45	95.12
Bombay: M. g. Broach f. g. . . . .	68.75	70.69	77.16	76.91	73.86	66.37	86.68	74.84	76.35	89.19
Alexandria: Sakellaridis f. g. f. . . . .	94.48	107.47	118.18	118.61	114.85	106.81	134.12	118.15	107.77	150.31
Liverpool:										
Middling american . . . . .	82.00	91.38	100.60	100.67	96.77	87.41	101.24	87.77	87.30	110.35
M. g. Broach, f. g. . . . .	n. 66.62	n. 75.08	n. 85.26	n. 85.21	n. 82.81	n. 74.39	n. 93.98	n. 70.68	n. 80.72	n. 89.01
Sakellaridis, f. g. f. . . . .	109.78	123.19	133.18	134.18	129.51	120.45	143.19	134.70	120.63	169.99
<b>BEEF</b>										
Berlin: Home grown (live weight) . . .	77.06	86.94	86.94	83.24	73.20	75.33	87.15	95.56	84.73	110.32
Paris: Home grown (dead weight) . . .	111.65	108.20	107.39	108.81	113.68	115.51	131.34	179.65	138.11	187.96
London: Home grown (dead weight) . . .	97.09	109.71	112.70	114.77	116.35	123.10	126.97	166.42	132.41	177.51
<b>MUTTON</b>										
Paris: Home grown (dead weight) . . .	201.98	201.58	210.71	205.03	219.85	253.34	209.70	259.84	214.99	273.36
London: Home grown (dead weight) . . .	119.49	126.93	138.41	153.02	162.06	163.80	116.65	215.47	131.46	228.94
<b>PORK</b>										
Denmark: Home grown (live weight) . .	103.38	103.39	96.09	97.22	105.51	100.65	86.53	105.86	72.86	108.46
Rotterdam: Home grown (live weight) .	81.24	69.78	68.74	66.66	67.70	66.66	58.32	91.61	59.29	88.53
Berlin: Home grown (live weight) . . .	114.36	104.73	90.15	81.26	80.40	83.73	106.25	136.38	99.87	120.20
Paris: Home grown (live weight) . . .	123.02	123.83	127.69	124.24	131.34	142.71	144.94	131.14	132.63	119.94
London: Home grown (dead weight) . . .	136.29	119.51	107.76	110.74	122.37	138.36	124.91	187.96	124.26	200.95
<b>BUTTER</b>										
Copenhagen: Danish . . . . .	146.33	135.11	120.88	113.79	116.42	118.08	178.64	274.02	173.71	271.67
Leeuwarden: Dutch . . . . .	135.39	131.23	112.48	108.32	108.32	112.48	174.97	264.54	196.37	279.47
Hamburg: Schleswig-Holstein . . . . .	316.33	309.91	283.09	279.13	263.06	226.89	282.40	324.10	285.57	322.38
London:										
Danish . . . . .	186.84	180.38	166.09	164.82	169.94	166.56	223.42	305.81	219.91	308.28
Argentine . . . . .	n. q.	n. 148.90	140.67	138.50	128.67	127.75	179.32	272.12	185.69	273.00
Australian, salted . . . . .	170.43	154.84	142.78	145.83	139.56	126.45	198.20	267.91	188.97	270.51
New Zealand, salted . . . . .	171.23	157.50	143.63	149.29	144.15	130.81	212.80	275.86	196.45	278.17
<b>CHEESE</b>										
Milan: Parmigiano-Reggiano . . . . .	236.14	286.65	286.65	284.29	283.29	279.61	252.70	266.17	270.21	294.16
Alkmaar: Edam 40 + . . . . .	85.82	83.32	81.24	100.82	100.48	84.36	91.24	144.76	101.87	137.43
Kempten: Emmenthal variety . . . . .	175.37	176.91	177.84	174.75	175.20	184.01	198.22	241.96	200.19	240.57
London:										
English Cheddar . . . . .	156.83	168.49	171.17	172.58	167.79	174.41	171.66	219.56	195.43	231.17
Canadian . . . . .	92.42	96.56	132.40	130.30	126.95	123.61	117.02	150.57	130.38	176.49
New Zealand . . . . .	89.62	91.17	91.31	94.63	90.42	80.88	114.81	152.83	112.80	145.34
<b>EGGS (per 100)</b>										
Denmark: Danish for export 1) . . . .	90.27	72.06	53.81	61.89	56.85	40.81	115.37	144.99	96.87	136.27
Roermond: Dutch for export . . . . .	6.50	6.39	4.73	4.52	4.46	4.08	9.69	12.04	8.58	11.10
Warsaw: Polish, average quality . . . .	4.44	4.19	3.78	4.03	3.45	3.21	4.99	6.72	5.85	6.96
Berlin: German, big, special quality . .	13.10	12.28	11.18	10.81	10.57	11.26	11.42	13.75	11.69	14.01

1) Per quintal.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	Sept.	Aug.	July	June	May	April	Sept.	Sept.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>GERMANY</b> (Statistisches Reichsamt) 1913 = 100.										
Foodstuffs of vegetable origin . . . . .	97.5	97.0	100.6	100.8	99.4	97.8	104.2	111.7	112.0	119.3
Livestock . . . . .	69.8	66.8	62.3	59.7	59.2	59.9	67.5	84.7	65.5	83.0
Livestock products . . . . .	105.7	102.1	96.2	93.1	93.2	85.3	94.8	108.4	93.9	108.4
Feeding stuffs . . . . .	86.3	84.0	87.3	86.6	84.2	83.4	87.1	96.8	91.6	101.9
Total agricultural products . . . . .	89.9	87.7	86.6	85.1	84.2	81.8	89.0	101.1	91.3	103.8
Fertilizers 1) . . . . .	70.8	70.2	69.1	71.9	71.2	71.9	69.2	73.6	70.4	76.5
Agricultural dead stock . . . . .	112.1	111.9	111.9	111.4	110.9	111.1	114.2	129.7	116.1	130.7
Finished manufactures ("Konsumgüter") . . . . .	113.2	112.8	112.2	110.8	109.9	109.2	113.8	137.8	117.5	140.1
Wholesale products in general . . . . .	94.9	94.2	93.9	92.9	91.9	90.7	95.1	108.6	96.5	110.9
<b>ENGLAND AND WALES</b> (Ministry of Agriculture and Fisheries) Average of corresponding months 1911-13 = 100.										
Agricultural products . . . . .	107	105	101	100	102	105	104	120	109	120
Feeding stuffs . . . . .	80	83	85	85	85	86	92	76	95	83
Fertilizers . . . . .	87	88	91	91	91	90	87	88	90	96
Wholesale products in general 2) . . . . .	94.9	95.5	96.1	95.6	95.2	92.4	94.6	94.9	94.9	97.7
<b>ARGENTINA</b> (Banco de la Nación Argentina) 1926 = 100.										
Cereals and linseed . . . . .	55.3	57.6	61.2	55.8	54.2	51.7	64.1	52.7	59.5	55.8
Meat . . . . .	70.4	68.4	66.2	64.1	65.0	63.7	68.3	102.2	69.8	94.3
Hides and skins . . . . .	66.5	73.7	75.7	74.8	72.3	53.2	61.7	53.4	53.1	64.5
Wool . . . . .	58.4	52.5	59.0	58.0	49.6	41.9	48.0	54.3	44.2	61.2
Dairy products . . . . .	61.1	67.0	66.9	55.4	48.4	49.4	56.2	75.8	56.9	74.5
Forest products . . . . .	70.5	74.3	75.7	75.7	71.8	71.8	62.5	89.5	68.4	99.3
Total agricultural products . . . . .	58.5	60.2	63.0	58.8	56.7	52.8	62.7	61.6	59.1	63.8
<b>CANADA</b> (Internal Trade Branch of the Dominion Bureau of Statistics) 1926 = 100.										
Field products (grain, etc.) . . . . .	49.5	54.9	60.8	49.4	46.9	41.1	39.5	40.5	40.7	43.6
Animals and animal products . . . . .	63.4	60.5	59.0	57.9	58.4	56.4	60.4	72.9	60.9	77.6
Total Canadian farm products . . . . .	54.7	57.0	60.1	52.6	51.2	46.8	47.3	52.6	48.3	56.3
Fertilizers . . . . .	75.8	75.8	73.0	73.0	73.0	71.7	72.2	74.7	71.8	82.6
Consumers' goods (other than foodstuffs, etc) . . . . .	77.4	76.2	75.3	75.0	75.5	74.8	77.8	79.4	78.8	80.0
Wholesale products in general . . . . .	68.9	69.4	70.5	67.6	66.9	65.4	65.9	69.7	67.0	72.1
<b>ESTONIA</b> (Central Bureau of Statistics) 1913 = 100.										
Commodities imported . . . . .	...	...	...	...	...	...	112	129	113	129
Commodities exported . . . . .	...	...	...	51	56	54	54	75	58	76
Agricultural products imported and exported . . . . .	...	...	...	...	...	...	70	90	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930), as well as to pages 77 to 79 of the *Crop Report of January 1932* and to page 517 of the *Crop Report of July 1932*.

1) From July 1932 new series. — 2) Calculated by the *Statist*, reduced to base-year 1913 = 100.

COUNTRIES AND CLASSIFICATIONS	Sept. 1933	Aug. 1933	July 1933	June 1933	May 1933	April 1933	Sept. 1932	Sept. 1931	Year	
									1932	1931
<b>UNITED STATES</b> (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	...	81	94	63	62	47	41	50	44	63
Fruits and vegetables . . . . .	...	120	103	74	68	66	68	83	71	98
Meat animals . . . . .	...	63	66	66	65	57	67	86	63	93
Dairy products . . . . .	...	72	71	65	63	59	67	92	70	94
Poultry and eggs . . . . .	...	67	67	55	62	56	84	99	80	96
Cotton and cottonseed . . . . .	...	71	84	69	65	49	57	47	46	63
Total agricultural products . . . . .	...	72	76	64	62	53	59	72	57	80
Commodities purchased by farmers 1) . . . . .	...	112	105	103	102	101	106	127	107	124
Agricultural wages 1) . . . . .	...	—	78	—	—	72	2) 84	2) 113	86	116
<b>UNITED STATES</b> (Bureau of Labor) 1926 = 100.										
Grains . . . . .	...	64.6	73.4	57.4	52.8	44.8	37.4	44.2	39.4	53.0
Livestock and poultry . . . . .	...	45.9	47.4	46.6	46.8	41.0	51.2	61.0	48.3	63.9
Other farm products . . . . .	...	62.5	63.7	56.2	51.8	46.7	52.1	65.4	51.4	69.2
Total agricultural products . . . . .	...	57.6	60.1	53.2	50.2	44.5	49.1	60.5	48.2	64.8
Agricultural implements . . . . .	...	83.2	83.0	83.0	83.0	83.1	84.9	94.5	84.9	94.0
Fertilizer materials . . . . .	...	69.0	68.6	68.0	66.8	62.9	63.6	74.2	66.9	76.8
Mixed fertilizers . . . . .	...	64.4	63.3	63.0	63.1	60.0	66.9	77.6	69.4	82.0
Cattle feed . . . . .	...	78.0	82.4	55.8	54.4	49.5	45.9	44.4	45.9	62.7
Non-agricultural commodities . . . . .	...	72.0	70.7	67.4	65.4	63.7	68.7	71.7	68.3	73.0
Wholesale products in general . . . . .	...	69.5	68.9	65.0	62.7	60.4	65.3	69.1	64.8	71.1
<b>FINLAND</b> (Central Bureau of Statistics) 1926 = 100.										
Cereals . . . . .	83	92	93	92	91	90	87	70	90	77
Potatoes . . . . .	46	84	106	106	95	93	68	59	71	68
Fodder . . . . .	75	73	69	69	68	65	65	52	69	63
Meat . . . . .	64	66	64	68	69	68	61	59	61	64
Dairy products . . . . .	84	79	77	73	71	67	74	72	76	76
Total agricultural products . . . . .	74	75	75	73	73	71	72	66	74	72
Wholesale products in general . . . . .	90	90	90	89	88	88	90	79	90	84
<b>HUNGARY</b> (Central Bureau of Statistics) 1913 = 100.										
Agricultural and livestock products . . . . .	53	54	57	66	66	68	80	88	—	—
Wholesale products in general . . . . .	70	71	73	79	79	80	90	96	—	—
<b>ITALY</b> (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.										
National agricultural products . . . . .	274.73	268.77	261.20	268.08	272.28	275.55	328.66	334.20	339.63	343.11
Wholesale products in general . . . . .	280.71	282.45	283.26	284.98	282.24	282.18	306.70	330.30	309.91	341.57
<b>NEW ZEALAND</b> (Census and Statistics Office) Average 1909-13 = 100.										
Dairy produce . . . . .	89.7	86.2	85.7	82.9	77.3	76.4	96.6	101.5	93.4	98.9
Meat . . . . .	115.7	120.1	113.9	108.8	107.5	110.5	100.0	127.5	110.9	130.1
Wool . . . . .	73.8	73.8	65.8	62.6	56.7	64.7	66.4	61.8	62.5	67.9
Other pastoral produce . . . . .	90.9	94.5	81.8	66.7	55.1	55.6	53.4	67.5	62.2	76.7
All pastoral and dairy produce . . . . .	91.9	91.8	87.0	82.5	77.4	79.9	86.0	94.6	87.0	96.5
Field products . . . . .	118.2	115.8	116.0	114.8	113.9	114.9	95.7	101.1	110.2	115.5
Total agricultural products . . . . .	92.7	92.3	87.8	83.4	78.4	80.9	86.2	94.8	87.7	97.0

1) 1910-14 = 100. — 2) October.

COUNTRIES AND CLASSIFICATIONS	Sept.	Aug.	July	June	May	April	Sept.	Sept.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	120	116	112	116	116	119	118	111	120	125
Potatoes . . . . .	97	168	160	91	84	80	73	97	101	130
Pork . . . . .	87	78	76	81	79	80	94	86	91	96
Other meat . . . . .	105	106	107	115	119	115	109	137	109	218
Eggs . . . . .	99	82	71	60	68	65	109	117	93	108
Dairy products . . . . .	130	127	121	119	119	119	132	127	124	156
Concentrated feeding stuffs . . . . .	95	94	95	94	98	99	106	97	104	121
Maize . . . . .	83	83	82	85	85	85	95	71	90	108
Fertilizers . . . . .	83	92	92	92	92	92	89	81	89	105
<b>NETHERLANDS 2)</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	64	52	46	36	38	37	46	57	4) 42	4) 58
Animal products . . . . .	52	50	49	50	51	50	51	64	4) 51	4) 57
Total agricultural products . . . . .	55	51	49	47	48	47	50	62	4) 49	4) 57
Agricultural wages . . . . .	74	74	74	74	74	83	83	95	4) 81	4) 93
Wholesale products in general 3) . . . .	50.7	49.4	49.4	49.4	48.7	48.0	51.4	61.6	77.8	65.7
<b>POLAND 2)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	38.3	36.1	50.8	53.4	47.9	50.4	42.7	46.6	49.8	53.9
Worked-up plant products . . . . .	49.4	48.8	64.4	65.2	60.6	63.5	55.2	60.1	61.3	65.9
Total products of plant origin . . . . .	43.8	42.3	57.5	59.4	54.2	56.9	48.9	53.3	55.6	60.0
Animals . . . . .	44.9	43.7	40.8	41.8	42.9	44.6	43.7	59.3	43.1	55.8
Dairy products . . . . .	48.6	43.4	43.7	39.6	42.6	40.5	55.8	63.3	55.4	68.0
Total products of animal origin . . . . .	46.8	43.6	42.3	41.0	42.8	43.0	49.0	61.3	48.2	60.8
Total agricultural products . . . . .	45.0	42.8	50.4	50.7	49.0	50.5	48.9	56.2	52.0	59.7
Fertilizers . . . . .	98.6	103.2	99.8	99.8	94.5	105.4	112.9	118.5	105.5	120.2
Industrial products . . . . .	63.3	63.6	64.5	64.1	63.0	63.0	69.7	76.0	69.6	79.4
Wholesale products in general . . . . .	54.9	53.9	58.2	58.1	56.8	57.6	60.2	67.0	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	48.0	49.3	58.1	61.1	59.3	62.1	57.7	74.4	67.5	74.3
Animal products . . . . .	58.2	55.6	54.0	57.8	55.2	56.2	56.8	70.6	56.6	72.2
Industrial products . . . . .	67.6	68.5	70.5	72.0	71.8	72.7	64.0	72.2	66.2	71.4
Wholesale products in general . . . . .	60.7	60.7	63.7	66.1	64.9	66.3	61.8	71.6	65.2	72.9

1) The agricultural years refer to the period 1 April-31 March. — 2) Average data for the year 1932 respectively 1932-33 are provisional — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Agricultural year 1 July-30-June.



# RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	20	13	6	29	22	AVERAGE					
	Oct.	Oct.	Oct.	Sept.	Sept.	Sept.	Oct.	Oct.	Commercial		
	1933	1933	1933	1933	1933				1933	1932	1931
SHIPMENTS OF WHEAT AND MAIZE.											
Danube to Antwerp/Hamburg . . .	(shill. per long ton)	14/3	14/3	14/-	13/9	13/9	13/7 1/4	n. 13/9	14/8	13/9	14/6
Black Sea to Antwerp/Hamburg . . .	(shill. per long ton)	11/-	10/9	10/6	11/-	10/9	10/11 1/4	n. 9/11	11/5	10/-	10/10
St. John to Liverpool 1)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7	1/7
Port Churchill to United Kingdom . . .	n. q.	n. q.	n. 2/10 1/2	n. 2/10 1/2	n. q.	n. q.	n. 2/9 1/2	n. 3/-	—	n. 3/-	—
Montreal to United Kingdom . . .	(shill. per 480 lbs.)	1/6	1/6	1/6	1/4 1/2	1/4 1/2	1/3 1/2	2/-	2/4	1/8 1/2 5)	0.08
Gulf to United Kingdom . . .	(shill. per 480 lbs.)	2/6	2/6	2/6	2/6	n. q.	n. q.	2 1/2 1/2	2/8	1/2	2/6
New York to Liverpool 1)	n. q.	1/6	1/6	1/6	1/6	1/9	1/4 3/4	1/6	1/9	1/6	1/8
Northern Range to U. K./Continent . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 2/3	2/1	5) 0.06 5)	0.09
North Pacific to United Kingdom (sh. per long ton)	n. 18/6	n. 18/6	n. 18/6	n. 18/6	n. 18/6	n. 18/6	n. 22/4	n. 22/8	n. 20/10	n. 22/2	n. 22/2
Vancouver to Yokohama 1) (gold \$ per sh. ton).	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.00	2.35	1.98	2.30
La Plata Down River, Necochea, Bahia Blanca 2) to U. K./Cont.	(shill. per long ton)	13/-	13/-	12/3	12/6	12/6	n. 11/11	n. 12/6	17/5	14/-	16/-
La Plata Up River 3) to U. K./Continent . . .	(shill. per long ton)	14/3	14/-	13/6	14/-	14/-	13/8 1/2	14/11	19/-	15/10	17/6
Karachi to U. K./Continent 4)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	20/-
Western Australia to U. K./Continent . . .	n. q.	23/9	23/6	n. q.	n. q.	n. q.	n. 23/-	26/9	27/8	24/6 1/2	26/-
SHIPMENTS OF RICE.											
Saigon to Europe . . . . .	(shill. per long ton)	n. 23/6	n. 22/6	n. 22/6	n. 23/-	n. 23/-	21/10 3/4	27/1	n. 20/10	23/5	24/3
Burma to U. K./Continent . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 23/3	23/9

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lb.

# EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates					Percentage bonus (+) or loss (—)					
	20	13	6	29	22	20	13	6	29	22	
	Oct. 1933	Oct. 1933	Oct. 1933	Sept. 1933	Sept. 1933	Oct. 1933	Oct. 1933	Oct. 1933	Sept. 1933	Sept. 1933	
Germany: reichsmark	123.100	123.050	122.900	123.075	123.250	—	0.3	—	0.3	—	0.2
Argentina: paper peso *)	130.191	128.822	130.874	131.088	129.995	—	40.8	—	41.4	—	40.9
Belgium: belga	71.925	71.950	71.950	72.025	72.050	—	0.2	—	0.2	—	0.0
Canada: dollar	3.475	3.350	3.275	3.330	3.275	—	33.0	—	35.4	—	36.8
Denmark: crown	73.000	71.500	71.000	72.000	71.750	—	47.4	—	48.5	—	48.3
Egypt: pound 2)	16.450	16.000	15.895	16.075	16.000	—	34.8	—	36.6	—	36.6
United Kingdom: pound sterling	3.610	3.427	3.340	3.387	3.310	—	30.3	—	33.9	—	36.1
United States: dollar	20.200	20.235	20.200	20.200	20.200	—	0.5	—	0.3	—	0.5
France: franc	67.000	67.000	67.000	67.375	67.125	—	26.1	—	26.1	—	25.9
Indo-China: piaster 3)	122.559	119.088	119.217	120.291	125.550	—	35.2	—	37.0	—	33.7
Hungary: pengő 4)	27.185	27.150	27.095	27.165	27.125	—	0.3	—	0.5	—	0.6
India: rupee *)	97.515	93.771	93.228	94.328	92.001	—	62.3	—	63.7	—	64.4
Netherlands: florin	208.100	208.220	208.100	208.150	208.200	—	0.1	—	0.0	—	0.1
Poland: zloty	57.825	57.725	57.725	57.725	58.000	—	0.5	—	0.7	—	0.2
Rumania: leu	n. 3.000	n. 3.000	3.000	3.000	3.000	—	3.2	—	3.2	—	3.2
Sweden: crown	84.000	82.500	82.000	82.875	82.500	—	39.5	—	40.6	—	40.6
Czechoslovakia: crown	15.325	15.325	15.305	15.325	15.300	—	0.2	—	0.2	—	0.4

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) a conversion has been made, the original exchange rates on New York being converted into Swiss francs by means of the U. S. dollar in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

**RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES  
IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)**

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada United States	Denmark	Egypt	France Indo-China (2)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)
Germany . . . . .	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	6.080	0.979	1.352	0.653	4.526	0.478	0.593	2.123	39.825	8.040	1.235
Argentina . . . . .	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	14.326	2.200
Belgium . . . . .	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	0.939	0.145
Canada . . . . .	Dollar	4.198	2.356	35.959	1.000	3.731	20.230	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	33.751	5.183
United States . . . . .																		
Denmark . . . . .	Crown	1.125	0.631	9.637	0.268	1.000	5.422	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	9.045	1.389
Sweden . . . . .	Plastre	0.207	0.116	1.777	0.049	0.184	1.000	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	1.668	0.256
Egypt . . . . .	Franc																	
France . . . . .	Plastre (2)	0.164	0.092	1.409	0.039	0.146	0.793	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.322	0.203
Indo-China . . . . .	Shilling	1.021	0.573	8.750	0.243	0.908	4.923	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	8.213	1.261
Great Britain . . . . .	Pengö	0.734	0.412	6.289	0.175	0.653	3.580	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	5.903	0.905
Hungary . . . . .	Rupee	1.532	0.860	13.125	0.365	1.362	7.384	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	12.319	1.892
India . . . . .	Lira	0.221	0.124	1.892	0.053	0.196	1.065	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	1.776	0.273
Italy . . . . .	Yen	2.092	1.174	17.924	0.498	1.860	10.084	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	16.824	2.583
Japan . . . . .	Florin	1.687	0.947	14.454	0.402	1.450	8.132	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	13.567	2.083
Netherlands . . . . .	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	3.786	0.581
Poland . . . . .	Len	0.025	0.014	0.215	0.006	0.022	0.121	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.202	0.031
Rumania . . . . .	Crown	0.124	0.070	1.065	0.030	0.111	0.599	0.756	0.122	0.169	0.081	0.563	0.059	0.074	0.264	4.953	1.000	0.154
Czechoslovakia . . . . .																		
Former Latin monetary union (3) . . . . .	Gold Franc	0.810	0.455	6.938	0.193	0.720	3.903	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	6.512	1.000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. —  
(2) 1 Gold piastre equals 10 francs. — (3) Data for purpose of comparison.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last <sup>five</sup>ten years.*

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## THE WORLD CEREAL CROP

The estimates that reached the Institute during November, while involving some modifications in last month's calculation of the world crop, in general confirm the opinion already formed.

*Wheat.* — In Europe several countries — Germany, Estonia, Hungary, the Netherlands and Yugoslavia — have revised their preliminary estimates, increases, though of small amount, being reported in every case. Italy has announced its first official estimate, which indicates an extremely large crop, much larger than that of last year, which was already a record for the country. It may be noted that the crop has been obtained on an area very little larger than in the preceding years. The total outturn of Europe has, in view of these new estimates, been augmented by 15 million bushels with respect to the calculation of last month. In North America Canada has reduced its estimate by 11 million bushels following on damage, verified after threshing, to late crops in the last period of ripening. In the other continents the estimates remained practically the same, the modifications having been negligible.

In the southern hemisphere, where the harvest has already begun, the information is less favourable than a month ago. In Australia the crops suffered from drought and hot winds in November and total production, forecast at 180 million bushels at the beginning of November, was reduced to 165 million in the middle of that month according to the information cabled to the Institute by the Commonwealth Government. Information from non-official sources leads to expectations of an even smaller crop than that officially estimated. Argentina has not yet communicated the first estimate of its crop; the information in mid-November, though less satisfactory than that till then available, due to damage from frosts, locusts and drought, which seems, however, to have occurred only in the less important areas of production, still leaves the possibility of a good average crop. Information from trade sources places the crop at around 260 million bushels, against the Institute's forecast last month of 225 million. Before any modification of the latter estimate is made it seems advisable to await more reliable information in the next few weeks. On the basis of the

new estimates communicated by the various Governments, world production of wheat should be about 15 million bushels smaller than calculated last month, the increase recorded for Europe not being sufficient to make up entirely for the reductions in North America and Australia.

*World Wheat Production (1)*  
(million bushels).

Years	Europe	N. America	S. America	Asia	Africa	Oceania	Total	U. S. S. R.
Average 1923-27 .	1,243	1,210	275	402	108	143	3,381	694
1928 . . . . .	1,409	1,504	399	342	116	168	3,938	807
1929 . . . . .	1,449	1,129	221	384	136	134	3,453	694
1930 . . . . .	1,360	1,290	273	456	115	221	3,715	989
1931 . . . . .	1,435	1,238	264	407	131	197	3,672	...
1932 . . . . .	1,490	1,190	277	393	140	220	3,710	...
1933 (Preliminary)	1,685	798	268	415	114	175	3,455	...

(1) Not including China, Persia, Turkey and Iraq.

The modifications in the totals of the crop in the various continents being small, the essential features of world production as well as of its distribution remain the same as were outlined in last month's Crop Report.

At the same time there is on the basis of these slight modifications in production estimates no reason for the time being to make any changes in the balance of supplies and requirements of wheat as made up last month. In any case the official data at present available concerning the commercial movement of wheat cover a period too short to enable an opinion to be formed as to the adequacy of the estimates of last month regarding world requirements. Total world exports are not, in fact, known, save for the two months August-September. It can only be said that this total, which was 44 million bushels in August and 48 million in September, in all 92 million, harmonizes so far with our forecast of import requirements at 525 million for the whole season and 44 million for the monthly average.

Winter sowings were carried out under good conditions in almost all European countries though in some areas there was a certain delay, due to the drought of October. Statistical data of areas sown are not yet available; the dominant impression is that the area under cultivation for wheat does not differ greatly from that of last year.

In the U. S. S. R. the data of sowings up to 10 November for all winter crops, almost exclusively wheat and rye, seem to indicate that the area under the Government plan will be fully attained. Weather has generally favoured sowings.

In North America several important areas have suffered from the autumn drought and condition of sowings in mid-November had not improved save very locally. This is the third year that sprouting of the crop has met with unfavourable conditions in the United States and the last two crops of winter wheat, though reduced for other reasons were the worst recorded in recent years. Crop condition is at present, however, rather favourable in comparison with that at the same date last year. The extent to which the area under winter wheat has been reduced has not yet been adequately determined.

In North Africa the persistent drought led to an appreciable delay in sowings, while in India these were carried out under good conditions.

*Rye.* — The available estimates now include almost all the producing countries save the U. S. S. R.

*World Production of Rye (1)*  
(million bushels).

	Europe	North America	South America	Total	U.S.S.R.
Average 1923-27 . . . . .	807	63	8	878	2) 937
1928 . . . . .	905	51	8	964	760
1929 . . . . .	941	47	4	992	803
1930 . . . . .	925	67	4	996	929
1931 . . . . .	776	39	8	823	...
1932 . . . . .	933	51	12	996	...
1933 (Preliminary) . . . . .	976	28	10	1,014	...

(1) Excluding U.S.S.R., China and Turkey. — (2) 1925-27.

Thanks to the great abundance of the European crop, world production in 1933 is the largest since the War. European countries almost without exception announce crops much above the average, especially in the two principal producing countries, Germany and Poland. As the area cultivated in Europe has remained practically stationary this result is to be attributed exclusively to the high unit-yields obtained, either through the favourable weather or through the application of rational methods. In North America on the other hand, due to the particularly unfavourable weather, an extremely small crop has been harvested. For the U. S. S. R. publication of the official crop estimates has been suspended since 1930; production in 1933 seems to have been fairly satisfactory, judging by the rather favourable character of the weather and the results of the crop in general.

Commercial movement of the rye crop, which already underwent a pronounced regression on the international market during the past season, is likely to be this season still more restricted in volume.

*Barley.* — The estimates cover almost all the producing countries; in the following totals the crops of certain countries that have not yet communicated their estimates have been calculated in an approximate fashion.

*World Production of Barley (1)*  
(million bushels).

	Europe	North America	Asia	Africa	S. America and Oceania	Total	U.S.S.R.
Average 1923-27 . . . . .	643	276	262	96	37	1,314	2) 239
1928 . . . . .	744	473	230	115	37	1,599	262
1929 . . . . .	827	386	266	119	32	1,630	331
1930 . . . . .	758	441	248	96	32	1,575	312
1931 . . . . .	689	271	248	106	41	1,355	...
1932 . . . . .	781	381	253	110	41	1,566	...
1933 (Preliminary) . . . . .	762	225	248	96	...	1,380	...

(1) Excluding U.S.S.R., China and Turkey. — (2) 1925-27.

European production appears to be a little above the average, despite slight diminution in area cultivated, but remains some millions below the good crop of last year. Crop results present appreciable variations from country to country. Rumania and Germany have obtained abundant crops, while Poland and Czechoslovakia, amongst the large producers, register results below the average. The severe regression in Spanish production with respect to that of last year is equally notable. In North America the crop has been very small, one of the smallest, in fact, of recent years, the combined affect of the contraction in area under cultivation and of the very low unit-yields consequent on drought. In Asia production remains about the same as last year and in Africa it is a little smaller. On the whole the world crop may be classed amongst the small due especially to the poor results obtained in North America.

*Oats.* — Data are now available for almost all the important producing countries; the few gaps have been filled by approximate evaluations. Figures for the U. S. S. R. are, however, lacking.

*World Production of Oats (1)*

(million bushels of 32 lb.).

	Europe	North America	Asia and Africa	S. America and Oceania	Total	U.S.S.R.
Average 1923-27 . . . . .	1,715	1,702	41	76	3,534	2) 942
1928 . . . . .	1,881	1,798	41	96	3,816	1,135
1929 . . . . .	2,060	1,419	48	103	3,630	1,084
1930 . . . . .	1,709	1,722	48	96	3,575	1,145
1931 . . . . .	1,695	1,467	41	103	3,306	...
1932 . . . . .	1,881	1,653	41	103	3,678	...
1933 (Preliminary) . . . . .	1,929	1,027	41	...	3,100	...

(1) Excluding U.S.S.R., China and Turkey. — (2) 1925-27.

Europe, despite the continued regression of areas cultivated to oats, obtained a crop slightly larger than that of last year and appreciably above the 1927-31 average. North America, on the other hand, harvested a distinctly small crop, one of the poorest for a number of years. As in the case of barley, there was a relatively small diminution in area cultivated combined with very low unit-yields consequent on the drought in early summer.

On the whole world production of oats, owing to the small American crop, is extremely poor, being 580 million bushels below that of last year and 450 million below the 1927-31 average.

\* \* \*

A summarizing by continents the crop information for the four cereals, it may be observed that Europe has obtained for the two bread cereals, wheat and rye, really exceptional crops, greatly exceeding the very large ones of last year, and for the two fodder cereals good average crops. North America on the other hand has this year had a very poor crop in the case of all cereals.

In Asia wheat production has been abundant and that of barley average. In Africa both wheat and barley have given results below the average. In the U. S. S. R. all cereal crops seem rather large. For the southern hemisphere average crops are expected. On the whole, therefore, world cereal production has been rather small.

G. CAPONE.

## CEREALS.

*Germany*: In the autumn sowing operations were often hindered and delayed by drought. Winter cereals, in the regions in which they were sown early, have already sprouted satisfactorily. Their crop condition is in general better in the western and southern regions of the country than in the east. Complaints are made everywhere of an invasion of mice and the protective measures taken by the communes have so far only yielded partial success.

Crop condition on 1 November by the system of the country and compared with that at the corresponding date of last year, was as follows: winter wheat 2.7 (2.5); winter rye, 2.6 (2.6); winter barley, 2.5 (2.5); winter spelt 2.4 (2.5).

According to the most recent estimate production of spelt this year will be about 355,166 thousand pounds against 341,365 in 1932 and 321,658 on the average of the five years ending 1931. Percentages 104.0 and 110.4.

*Austria*: During the first half of October, the weather was fine and warm. At mid-October there was a change in the weather, bringing rain which, in the regions of over 1000 metres, took the form of snow. The temperature fell considerably and, in places, night frosts were reported. During the last ten days of October, the temperature rose a little, the weather remaining, however rainy. Towards the end of October there was a new fall in temperature accompanied by heavy rain and night frosts.

Sowing operations for winter cereals were generally completed by mid-October. Germination was regular. Growth of the plants was checked somewhat by cold weather.

On 1 November the crop condition of winter cereals was as follows: winter wheat: 2.3 (against 2.4 on 1 November, 1932); winter rye: 2.1 (2.2) and winter barley: 2.4 (2.2).

*Bulgaria*: Weather in October was fairly good and favoured sowings of winter cereals, which were made under good conditions.

*Estonia*: Thanks to the excellent weather winter crops were in good condition in mid-October.

*Irish Free State*: The summer was more than ordinarily dry, but the shortage of moisture had no adverse effect on crops except on oats. The yields from this crop are slightly below average but not sufficient to result in any shortage. The autumn sowings were carried out under most favourable conditions. The weather conditions are quite suitable for all farm operations ordinarily carried out in the autumn.

*France*: The rather mild, damp weather from mid-October to mid-November was on the whole favourable to sowings, which were generally carried out under good conditions and were almost completed toward 10 November despite the hindrance of bad weather in a number of districts. The first sowings have sprouted well and are generally of good appearance.





COUNTRIES	†) AREA						†) PRODUCTION							
	1933	1932	Average	%	1933	Aver.	1933	1932	Average	Aver.	1933	1932	Average	%
	1933/34	1932/33	1927 to 1931	% 1933/34	1933/34		1932/33	1927 to 1931	% 1933/34		1933/34	1932/33	1927 to 1931	% 1933/34
	1933/34	1932/33	1927/28 to 1931/32	1932/1933 = 100	1933/34		1932/33	1927/28 to 1931/32	1933/34		1932/33	1927/28 to 1931/32	1932/1933 = 100	
	1,000 acres				1,000 centals			1,000 bushels						
Estonia . . . .	373	364	351	102.7	106.3	4,680	3,983	3,664	8,358	7,113	6,543	117.5	127.7	
Finland . . . .	563	538	533	104.6	105.8	7,855	7,261	6,719	14,027	12,966	11,998	108.2	116.9	
France . . . .	1,714	1,732	1,853	98.9	92.5	20,562	18,971	18,190	36,718	33,876	32,482	108.4	113.0	
Greece . . . .	191	163	142	117.0	134.1	1,823	1,472	920	3,255	2,629	1,645	123.8	198.0	
Hungary . . . .	1,674	1,553	1,582	107.8	105.8	20,424	16,969	15,283	36,471	30,301	27,291	120.4	133.6	
Italy 1) . . . .	285	288	306	98.9	93.2	3,805	3,535	3,587	6,794	6,313	6,406	107.6	106.1	
Latvia . . . .	637	593	618	107.5	103.2	7,744	6,604	5,392	13,828	11,793	9,629	117.3	143.6	
Lithuania . . .	1,210	1,194	1,194	101.3	101.3	12,653	11,653	11,584	22,595	20,808	20,668	108.6	109.2	
Luxembourg . .	20	20	18	102.6	114.7	307	278	217	549	496	388	110.7	141.6	
Norway . . . .	16	16	19	96.2	83.4	246	292	288	438	422	515	84.0	85.2	
Netherlands . .	406	410	476	99.2	85.4	7,665	7,650	8,756	13,688	13,661	15,636	100.2	67.5	
Poland . . . .	14,312	13,951	14,120	102.6	101.4	140,876	134,713	139,631	251,565	240,560	249,342	104.6	100.9	
Portugal . . . .	...	366	411	...	...	2,024	3,590	2,610	3,615	6,411	4,660	36.4	77.6	
Rumania . . . .	944	861	834	109.7	113.1	9,753	5,888	7,428	17,417	10,513	13,264	165.7	131.3	
Sweden . . . .	545	516	621	105.7	87.8	10,229	9,573	8,587	18,267	17,094	15,333	106.9	119.8	
Switzerland . .	46	46	48	100.8	95.4	827	839	866	1,476	1,481	1,547	99.7	95.4	
Czechoslovakia .	2,595	2,585	2,545	100.4	101.9	43,398	47,970	36,896	77,497	85,661	65,885	90.5	117.6	
Yugoslavia . . .	633	600	563	105.4	112.5	5,409	4,664	4,162	9,659	8,328	7,451	116.0	130.0	
Total Europe . .	§ 41,220	40,358	41,306	102.1	99.8	540,249	517,365	482,091	964,734	923,867	860,880	104.4	112.1	
*U. S. S. R. w) . .	63,003	64,402	64,292	97.8	98.0	...	...	...	...	...	...	...	...	
Canada . . . .	583	774	960	75.3	60.7	2,646	5,005	7,917	4,725	8,938	14,138	52.9	33.4	
United States . .	2,716	3,326	3,254	81.7	83.5	12,945	22,629	22,608	23,116	40,409	40,371	57.2	57.3	
Total North Amer.	3,299	4,100	4,214	80.5	78.3	15,591	27,634	30,525	27,841	49,347	54,509	56.4	51.1	
Turkey . . . .	640	504	656	126.9	97.6	5,512	4,368	5,310	9,842	7,800	9,482	126.2	103.8	
Algeria . . . .	4	3	4	118.6	96.2	17	15	29	30	27	53	111.3	56.2	
*Argentina . . .	4) 1,730 4)	1,624 4)	1,232	106.5	140.4	...	7,275	3,999	...	12,992	7,141	...	...	
GRAND TOTALS .	§ 45,163	44,965	46,180	100.4	97.8	561,369	549,382	517,955	1,002,447	981,041	924,924	102.2	108.4	

## BARLEY.

Germany . . . .	3,917	3,875	3,799	101.1	103.1	76,421	70,872	66,774	159,214	147,652	139,115	107.8
Austria . . . .	418	416	398	100.5	105.1	8,212	6,043	5,615	17,109	12,590	11,698	135.9
Belgium . . . .	80	94	77	85.8	103.9	1,860	2,256	1,844	3,876	4,701	3,842	82.4
Bulgaria . . . .	577	568	601	101.6	96.1	7,934	6,769	7,065	16,529	14,102	14,720	112.2
Spain . . . .	4,521	4,837	4,516	93.5	100.1	46,582	63,632	44,731	97,047	132,569	93,192	73.2
Estonia . . . .	256	266	279	96.3	91.8	1,710	2,212	2,500	3,562	4,608	5,209	77.3
*Irish Free State .	117	103	120	113.1	97.6	...	2,388	2,768	...	4,974	5,768	...
Finland . . . .	314	308	280	101.7	112.0	3,629	3,944	3,261	7,560	8,218	6,795	92.0
France . . . .	1,796	1,779	1,831	100.9	98.1	27,594	24,008	24,084	57,488	50,017	50,176	114.9
Engl. and Wales .	751	961	1,081	78.2	69.5	13,955	17,181	19,663	29,073	35,793	40,965	81.2
*Scotland . . . .	61	69	105	88.6	58.2	...	1,478	2,092	...	3,080	4,359	...
*N. Ireland . . .	1	1	2	135.7	81.9	...	26	39	...	53	81	...
Greece . . . .	550	519	481	105.9	114.2	5,089	4,616	3,288	10,601	9,618	6,850	110.2
Hungary . . . .	1,203	1,160	1,100	103.7	109.4	16,671	15,854	12,977	34,733	33,030	27,037	105.2
Italy 1) . . . .	510	520	569	98.1	89.7	4,993	5,456	5,261	10,402	11,367	10,961	91.5
Latvia . . . .	456	457	432	99.8	105.6	4,051	4,247	3,476	8,439	8,849	7,242	95.4
Lithuania . . . .	512	497	487	103.0	105.1	5,060	5,268	4,626	10,541	10,975	9,536	106.0
Luxembourg . . .	8	8	9	93.1	81.3	116	104	123	242	216	256	112.1
Malta 7) . . . .	6	6	7	92.1	84.3	119	129	143	248	269	297	91.9
Norway . . . .	142	137	141	103.6	100.8	2,282	2,608	2,253	4,754	5,433	4,693	87.5
Netherlands . . .	44	49	72	88.4	60.5	1,186	1,301	1,933	2,471	2,710	4,027	91.2
Poland . . . .	2,928	2,982	2,984	98.2	98.1	30,424	30,883	32,640	63,384	64,341	68,001	98.5
Portugal . . . .	...	192	174	...	...	690	1,151	937	1,438	2,398	1,953	60.0
Rumania . . . .	4,473	4,416	4,676	101.3	95.7	41,182	32,345	41,001	85,798	67,387	85,421	127.3
Sweden . . . .	279	293	306	95.2	90.9	4,226	5,234	4,939	8,805	10,904	10,290	80.7
Switzerland . . .	17	17	17	98.8	99.8	295	285	270	615	593	562	103.8
Czechoslovakia .	1,642	1,762	1,766	93.2	93.0	26,744	33,177	28,228	55,717	69,121	58,809	80.6
Yugoslavia . . .	1,059	1,006	1,025	105.3	103.3	10,208	8,631	8,452	21,268	17,982	17,609	118.3
Total Europe . .	§ 26,652	27,125	27,108	98.3	98.3	341,233	348,206	326,084	710,914	725,443	679,358	98.0
*U. S. S. R. w) .	711	872	1,009	81.6	70.5	...	...	...	...	...	...	...
Canada . . . .	3,658	3,758	4,728	79.3	77.4	30,594	38,771	51,665	63,737	80,773	107,637	78.9
United States . .	10,540	13,212	11,947	97.8	88.2	76,676	143,976	130,034	159,741	299,950	270,905	53.3
Total North Amer.	14,198	16,970	16,675	83.6	85.1	107,270	182,747	181,699	223,478	380,723	378,542	58.7

\*\* St. II Engl.

COUNTRIES	1) AREA					2) PRODUCTION							
	1933	1932	Average	% 1933/34		1933	1932	Average	1933	1932	Average	% 1933/34	
	1933/34	1932/33	1927 to 1931	1932	Ave.	1933/34	1932/33	1927 to 1931	1933/34	1932/33	1927 to 1931	1932	Aver.
			1927/28 to 1931/32	1932/1933	= 100			1927/28 to 1931/32			1927/28 to 1931/32	1932/1933	= 100
	1,000 acres					1,000 centals			1,000 bushels				
Korea . . . . .	2,501	2,446	2,297	102.3	108.8	20,979	21,161	18,124	43,708	44,086	37,758	99.1	115.8
Japan . . . . .	1,940	2,107	2,198	92.1	88.2	32,152	37,316	37,758	66,984	77,744	78,664	86.2	85.2
Syria a. Lebanon . . . . .	739	794	824	93.0	89.6	6,061	4,463	8,701	12,626	9,299	18,127	135.8	69.7
Turkey . . . . .	3,020	3,401	3,266	88.8	92.5	28,660	25,679	28,055	59,710	53,499	58,407	111.6	102.2
Total Asia . . . . .	8,200	8,748	8,585	93.7	95.5	87,852	88,619	92,618	183,028	184,628	192,957	99.1	94.9
Algeria . . . . .	3,277	3,339	3,427	98.1	95.6	14,165	14,833	17,277	29,510	30,902	35,995	95.5	82.0
Egypt . . . . .	292	366	359	79.9	81.5	4,434	5,792	5,340	9,237	12,067	11,126	76.5	83.0
Eritrea . . . . .	69	99	52	100.0	132.1	432	617	167	900	1,286	347	70.0	259.3
French Morocco . . . . .	3,439	3,298	3,008	104.3	114.3	23,060	22,630	21,725	48,042	47,147	45,261	101.9	106.1
Tunis . . . . .	865	1,507	1,197	57.4	72.2	2,646	7,496	4,010	5,512	15,616	8,355	35.3	66.0
Total Africa . . . . .	7,942	8,609	8,043	92.3	98.7	44,737	51,368	48,519	93,201	107,018	101,084	87.1	92.2
*Argentina . . . . .	4) 1,730	4) 1,520	1,368	113.8	126.5	...	15,432	7,803	...	32,151	16,256	...	...
*Uruguay . . . . .	10	10	10	101.0	104.0	...	...	74	...	...	153	...	...
GRAND TOTALS . . . . .	5) 56,992	61,452	60,411	92.7	94.3	581,092	670,940	648,920	1,210,621	1,397,812	1,351,941	86.6	89.5

## OATS.

Germany . . . . .	7,863	8,117	8,578	96.9	91.7	153,246	146,613	143,683	478,890	458,163	449,005	104.5	106.7
Austria . . . . .	755	784	759	96.8	99.5	11,995	10,020	9,192	37,485	31,312	28,726	122.0	130.5
Belgium . . . . .	733	712	694	102.9	105.6	16,348	16,763	14,894	51,088	52,385	46,544	97.5	109.8
Bulgaria . . . . .	331	281	330	117.7	100.4	3,432	2,488	2,348	10,723	7,777	7,339	137.9	146.1
Spain . . . . .	1,599	1,926	1,926	83.0	83.0	12,415	18,309	13,588	38,798	57,215	42,461	67.8	91.4
Estonia . . . . .	343	356	357	96.2	95.9	2,493	2,869	2,943	7,789	8,966	9,197	86.9	84.7
*Irish Free State . . . . .	650	632	645	102.8	100.7	...	14,049	14,100	...	43,904	44,062	...	...
Finland . . . . .	1,110	1,124	1,106	98.7	100.4	13,193	14,759	13,291	41,236	46,122	41,535	89.4	99.3
France . . . . .	8,366	8,371	8,547	99.9	97.9	125,685	106,221	106,172	392,762	331,938	331,785	118.3	118.4
Engl. and Wales . . . . .	1,494	1,580	1,759	94.6	84.9	26,947	28,022	30,863	84,210	87,570	96,446	96.2	87.3
*Scotland . . . . .	854	867	872	98.5	97.9	...	16,710	14,999	...	52,220	46,872	...	...
*N. Ireland . . . . .	288	286	305	100.8	94.5	...	6,464	6,014	...	20,201	18,792	...	...
Greece . . . . .	324	304	293	106.8	110.8	3,050	2,325	1,615	9,533	7,266	5,048	131.2	188.8
Hungary . . . . .	572	578	649	99.0	88.2	6,973	6,962	7,021	21,791	21,756	21,940	100.2	99.3
Italy 1) . . . . .	1,110	1,103	1,238	100.6	89.6	12,706	13,302	13,036	39,706	41,568	40,738	95.5	97.5
Latvia . . . . .	758	802	736	94.5	103.0	6,920	7,121	5,941	21,626	22,252	18,565	97.2	116.5
Lithuania . . . . .	848	922	820	92.0	103.5	7,957	7,857	7,830	24,865	24,553	24,469	101.3	101.6
Luxemburg . . . . .	69	69	72	100.6	95.0	1,173	1,018	951	3,665	3,182	2,970	115.2	123.4
Norway . . . . .	242	235	240	103.3	100.9	3,950	4,265	3,879	12,342	13,328	12,121	92.6	101.8
Netherlands . . . . .	337	350	376	96.3	89.8	6,640	6,693	7,165	20,751	20,916	22,392	99.2	92.7
Poland . . . . .	5,444	5,487	5,224	99.2	104.2	54,013	52,709	53,999	168,791	164,714	168,747	102.5	100.0
Portugal . . . . .	...	459	445	...	...	1,164	2,354	1,937	3,636	7,355	6,052	49.4	60.1
Rumania . . . . .	2,016	1,956	2,655	103.1	75.9	18,087	14,169	22,199	56,521	44,276	69,372	127.7	81.5
Sweden . . . . .	1,541	1,579	1,681	97.6	91.7	20,624	26,191	24,617	64,451	81,845	76,927	78.7	83.8
Switzerland . . . . .	40	41	49	98.7	82.2	761	776	859	2,377	2,425	2,685	98.0	88.5
Czechoslovakia . . . . .	1,983	2,027	2,078	97.8	95.4	30,918	36,681	30,540	96,618	114,628	95,437	84.3	101.2
Yugoslavia . . . . .	929	810	950	114.8	97.9	8,180	5,935	6,873	25,563	18,548	21,478	137.8	119.0
Total Europe . . . . .	5) 39,266	39,973	41,562	98.3	94.5	548,870	534,422	525,436	1,715,207	1,670,060	1,641,979	102.7	104.5
Canada . . . . .	13,529	13,138	12,997	103.0	104.1	105,846	133,131	130,976	330,769	416,034	409,297	79.5	80.8
United States . . . . .	37,023	41,193	39,590	89.9	93.5	223,530	396,234	379,047	698,531	1,238,231	1,184,522	56.4	59.0
Total North Amer. . . . .	50,552	54,331	52,587	93.0	96.1	329,376	529,365	510,023	1,029,300	1,654,265	1,593,819	62.2	64.6
Syria and Lebanon . . . . .	28	28	35	101.8	80.6	280	298	238	875	931	743	93.7	117.7
Turkey . . . . .	399	294	350	135.6	113.9	3,748	2,793	2,407	11,712	8,729	7,523	134.2	155.7
Algeria . . . . .	21	488	592	106.9	88.1	3,042	2,786	4,138	9,507	8,707	12,932	109.2	73.5
French Morocco . . . . .	74	56	83	131.1	88.6	668	405	673	2,086	1,267	2,105	164.7	99.1
Tunis . . . . .	74	54	104	136.4	71.0	551	617	789	1,722	1,929	2,466	89.3	69.8
Total Africa . . . . .	669	598	779	112.0	85.8	4,261	3,808	5,600	13,315	11,903	17,503	111.9	76.1
*Argentina . . . . .	4) 3,460	4) 3,652	3,595	94.7	96.2	...	22,267	20,462	...	69,583	63,944	...	...
*Uruguay . . . . .	74	146	150	119.5	116.1	...	...	908	...	...	2,837	...	...
GRAND TOTALS . . . . .	5) 90,914	95,224	95,313	95.5	95.4	886,535	1,070,686	1,043,704	2,770,409	3,345,888	3,261,567	82.8	84.9

1) The two dates mentioned refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — \* Countries not included in the totals. — 5) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area are not yet available. — w) Autumn crops. — s) Spring crops. — t) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Including spelt and malin. — 3) European crops only. — 4) Area sown. — 5) Barley and malin.

According to information received in commercial circles the area sown will be at least equivalent to that of last year in the regions of large production and even a little larger in some others, such as the southeast and west, despite the advice of the Ministry of Agriculture to reduce them and the difficulty of marketing wheat at the legal minimum price. The weather evidently favoured sowings but the governmental protection enjoyed by this cereal, which makes it the least unprofitable crop, also favours its extension.

On the other hand the trade maintains its estimate of a wheat crop above that indicated by the official forecast; the figure most generally given is from 216 to 218 million centals (360 to 364 million bushels) with a surplus of over 13 (22) millions. It should be noted that this estimate, established by enquiries as to first threshing results, is appreciably below the forecasts of the trade, which attained 231 (386) million.

The situation of the market remains bad. The trade is buying little, finding the minimum legal prices too high. The application of the law for the defence of the wheat market is also meeting with serious difficulties in application.

*Great Britain and Northern Ireland* : October was on the whole a favourable month for agriculture in England and Wales. During the first three weeks, the weather generally was mild with some rain. During the last weeks of the month there was a colder spell with snow in some parts of the country followed by rain. Some frost were experienced but no great damage has been done. Satisfactory progress has been made with autumn cultivation. It is anticipated that rather more winter wheat will be sown this year; early sowings of winter wheat are showing a healthy vigorous plant. The land has worked well after the rain and is cleaner than usual. Good seed beds have generally been obtained.

In Northern Ireland October weather was mostly unsettled with heavy rains, a fall in temperature and some night frosts. A considerable quantity of the oat crop was threshed during the month and the results continued to show that the grain is not as well filled as was the case last year. The acreage under barley is comparatively small. Fairly good yields are being obtained where threshing has been done.

In Scotland, the grain harvest was almost finished before the end of September. During the first half of October the weather was dry and mild and favoured the completion of the work. Little or no damage was caused to the crops by disease or insect pests. The weather was highly favourable for autumn work on farms. For a time ploughing was delayed by the dry, hard condition of the soil but during this period the carting of manure made excellent progress. Towards the end of the month wet and colder conditions were general and the rain brought the land into better order for cultivation. The sowing of wheat made very good progress under excellent conditions and at the end of October in early districts the braird was well above the ground.

*Hungary* : From 28 October to 11 November temperatures were normal and precipitation much above average. In places the rainfall was even more than double the normal.

At the end of this period sowings of winter cereals were ended everywhere. Germination was regular. Losses due to insects are insignificant while complaints of damage from field mice are general. Compulsory destruction of these pests has been ordered.

*Italy* : During the latter half of October the rains were very abundant and accompanied by strong winds and hail over large areas of the peninsula; sowings of wheat and minor cereals have consequently been somewhat hindered. During the

first half of November the weather was rather rainy, with the result that the sowings had in some areas to be suspended. The delay, however, is not causing anxiety.

*Latvia* : In the first two decades of October the weather was fairly warm and only toward the end of the month temperatures fell considerably with severe frosts. Sowings of winter cereals were made under good conditions for about 90 % of the crop. Germination of winter rye took place generally in normal weather save for some delay through cold.

*Lithuania* : At the beginning of the sowing period, excessive rain was unfavourable. Towards the middle and end, however, they were rather favourable and germination took place regularly.

*Luxemburg* : Preparations for autumn sowings were made under good conditions.

*Poland* : Sowings of winter cereals were effected in most regions of the country under favourable conditions. Crop condition of wheat, rye and barley on 15 October last, expressed according to the system of the country, was 3.2 ; at the corresponding date of last year, it was 3.3 for barley, 3.4 for wheat and 3.6 for rye.

In all departments fairly considerable damage was caused to winter crops by an invasion of mice. This refers particularly to the departments of the West where 88 % of the reports indicate damage by mice.

*Rumania* : Towards mid-November winter cereal sowings were being effected under good conditions. Early sowings have germinated normally. According to the first estimates, the areas sown to winter cereals up to 1 November this year are as follows : winter wheat : 2,133,000 acres (against 3,289,000 and 2,108,000 up to the same date of 1932 and 1931 respectively) ; winter rye : 297,000 acres (433,700 ; 212,100) ; winter barley : 61,300 acres (100,100 ; 79,600). Compared with 1932, there is a considerable reduction in the area sown to winter cereals, whereas this year's figures are about the same as in 1931. This reduction is due to the drought during the first half of October, to the too frequent rains during the latter half of the same month and to the considerable delay in harvesting the maize crop. Owing to the prolonged autumn, it is anticipated that sowings may still be continued.

*Czechoslovakia* : The weather in September was relatively invariable and warm, more variable in October with great differences between various districts.

The period since then has been fairly warm but there has been very little moisture, especially in the west of the country. Autumn sowings are mostly terminated. The severe drought does not, however, permit the seed to sprout save very slowly and irregularly. According to the information from various correspondents, there will be greater sowings of wheat this year at the expense of rye.

On 1 November condition of autumn cereals according to the system of the country was 2.7 for wheat (2.4 last year) and 2.9 for rye (2.3). Crop condition is worse in Bohemia, better in Slovakia.

The dry weather has greatly favoured spread of field mice, which increase in numbers almost throughout the country, their numbers in certain regions being exceptional and constituting a danger for winter cereals.

*Yugoslavia* : During October the weather was very changeable with a preponderance of rainy days. The abundance of rain did not, however, delay preparatory work

for the winter cereal sowings, which were effected under good conditions. Towards the end of the month the snow which fell in the mountains in northern regions of the country brought about a fall in temperature.

According to the final official data, production of mixed grain this year (1,225,000 centals (2,112,000 bushels), exceeds that of 1932 by 23.2 % and the average 1927-31 by 28.8 %. As regards spelt production (318,000 centals) there is also an increase of 26.7 % and 21.1 % respectively. The increase in these crops is due rather to the good yield per acre than to the increase in area; the mixed grain area has increased by 8.5 % compared with last year and the average of 1927-31, whereas for spelt this year's area remains about the same.

*U. S. S. R.* : On 25 October last, cereals harvested on an area of 182,710,000 acres, or 94.7 % of the area cut, had been stocked. At the same date, the quantity of cereals threshed represented 78.1 % of the quantity harvested.

The data of production of cereals in the current season are still lacking. There is only an indication for *Ukraine*, in which production of cereals in the current year should be about twice as large as that of 1932 and about one-third larger than the average of a number of years.

At the beginning of November, the quantity of cereals purchased by the Government exceeded by about 35,274,000 centals, that purchased during the whole of last year.

According to the data published by the People's Commissariat for Agriculture, the area sown to winter wheat up to 10 November was 88,440,000 acres, namely 94.2 % of the plan. At the same period, preparatory work for the spring crops was carried out on an area of 64,530,000 acres or 71.5 % of the plan.

*Canada* : For cereals changes on the preceding estimates are relatively slight except in the case of rye, the figure for which has been considerably reduced particularly in *Saskatchewan* and *Alberta*. The main change took place in wheat in *Alberta*, where the estimate has been reduced by 4.8 million centals (8 million bushels) because frost and drought damage in September was greater than was apparent. Threshing has been practically completed but much wet grain is being marketed in *Alberta*. About 62 % of the estimated wheat receipts has come forward up to date, namely, 81.0 million centals (135 million bushel) Grades and quality are lower than last year.

The areas sown to winter wheat and rye in 1933 for the crops of 1934 are estimated as follows :

Crops	1933	1932	Average 1927 to 1931	% 1933 = 100	% 1933 Average = 100
	(000 acres)				
Winter wheat . . . . .	195	547	812	108.8	73.3
Winter rye . . . . .	472	496	748	95.2	63.1

Crop condition of winter wheat on October 31 was 96 against 98 on October 31, 1932; winter rye: 90 against 90. For all *Canada* the proportion of land intended for next year's crops that had been ploughed up to October 31, 1933 is estimated at 41 % compared with 37 % as at the same date of 1932.

*United States* : In the last week of October warm weather stimulated growth. Most parts of the western areas need moisture but present conditions are fair. In the following week crop condition improved; beneficial rains fell in Southwest Pacific districts and snowfalls in the Northwest.

*Palestine* : Climatic conditions during September showed a continuation of the cool temperatures and heavy dew fall of the preceding month. *Afir* sowings started towards the end of the month in the Gaza and Beersheba areas and parts of the hill country of Nablus and Jenin.

*Syria and Lebanon* : Production of cereals in 1933 was poor owing to the persistent drought and partly to rust, which damaged sowings, particularly in Lebanon.

*Algeria* : The drought persisted during the whole of October, frequently hindering preparation of the land. Tillage is very backward and autumn sowings could not be commenced at the end of October except in the southern area, where the sowings effected after the September rains have been compromised by drought.

*Kenya* : In September much of the wheat in the main areas was in full ear and in excellent condition. A considerable proportion, however, was still in a young state and its progress was dependent upon further rainfall.

*French Morocco* : The drought persisted up to 20 October when it was interrupted by general storms throughout western Morocco. The quantity of precipitation was nevertheless quite insufficient to permit sowing of cereals. The latter were effected only very locally in some particularly favoured places.

Not altogether favourable conditions should, on the whole, bring about a certain reduction in winter cereal sowings, but a decrease is particularly forecast for soft wheat, owing to the difficulty experienced this year by European and native farmers in marketing this product ; barley and spring crops should apparently benefit by this decrease, more so than hard wheat.

*Tunis* : The prolonged drought during October was unfavourable for the preparation of the soil ; tillage for the sowings has been effected on dry land and under only average conditions. The sowings could not be commenced at the beginning of November except on some sections cultivated by Europeans in the North. In the last two days of October, rain fell in the southern areas but was quite inadequate to permit sowings and did not affect the principal areas of production.

*Union of South Africa* : Winter grain crops were favourably reported on in September in the southwestern districts and along the south coast.

*Australia* (Telegram of 17 November) : In Western Australia the weather has been generally very favourable and a plentiful yield is expected. Weather in the other States has been unfavourable, rain having been lacking and hot drying winds prevalent.

## MAIZE

*Austria* : Harvesting was late. Ripening was nevertheless sometimes unsatisfactory.

*Rumania* : Towards mid-November, the harvesting of maize had been completed in most parts of the country. Yields generally correspond to the previous estimates.

*Czechoslovakia* : The crop, which had suffered greatly from drought, gave a rather unsatisfactory outturn this year.

*Yugoslavia*: Weather in October generally favoured ripening and harvesting. Early crops ripened and were brought in at the end of the month but rains hindered ripening of late crop which were, in some districts, still standing.

*United States*: In the last week of October maize husking made better progress. Gathering had been practically completed on 8 November with a minimum of frost damage.

*India*: In the Punjab, which is one of the leading maize provinces, it was reported in the last decade of October that insects had damaged the crop in the Ferozepore, Bajri and Dera Ghazi Khan districts.

*Maize.*

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100							1932 = 100	Average = 100
	1,000 acres					1,000 centals			1,000 bushels of 56 lbs				
Austria . .	160	165	145	97.3	110.9	3,049	2,914	2,639	5,445	5,204	4,712	104.6	115.6
Bulgaria . .	1,762	1,829	1,726	96.3	102.1	22,996	23,246	16,098	41,064	41,511	28,747	98.9	142.8
Spain . . .	1,059	1,102	1,053	96.0	100.5	12,362	15,280	14,245	22,076	27,286	25,438	80.9	86.8
*France . . .	813	814	848	99.9	95.9	...	9,025	11,031	...	16,116	19,699	...	...
Greece . . .	1) 687	654	521	105.0	131.7	2) 4,206	4,707	3,386	7,511	8,406	6,046	89.4	124.2
Hungary . .	2,862	2,905	2,670	98.5	107.2	38,698	53,617	34,016	69,104	95,746	60,743	72.2	113.8
Italy 2) (s)	3,122	3,259	3,446	95.8	90.6	52,001	61,906	47,773	92,858	110,546	85,309	84.0	108.8
3) (*)	342	322	230	106.1	148.4	...	4,569	2,199	...	8,159	3,926	...	...
*Poland . . .	225	240	227	94.1	99.3	...	2,331	2,018	...	4,163	3,603	...	...
Rumania . .	12,059	11,803	11,195	102.2	107.7	103,618	132,123	102,555	185,032	235,934	183,134	78.4	101.0
Switzerland .	2	3	3	98.7	86.7	60	62	75	106	110	135	96.4	78.9
Czechoslov..	331	338	349	99.3	94.6	4,727	6,819	5,248	8,440	12,176	9,371	69.3	90.1
Yugoslavia . .	6,468	6,488	5,893	99.7	109.8	80,593	105,667	65,007	143,916	188,692	116,083	76.3	124.0
—													
Canada . . .	137	130	143	95.4	95.7	2,608	2,832	2,908	4,658	5,057	5,192	92.1	89.7
United Stat.	103,022	107,776	100,519	95.6	102.5	1,282,400	1,610,319	1,406,123	2,290,000	2,875,570	2,510,933	79.6	91.2
—													
*Syria & Leb.	66	61	96	109.3	69.0	...	759	1,091	...	1,355	1,948	...	...
Turkey . . .	864	830	798	104.1	108.2	9,921	8,267	9,227	17,716	14,762	16,477	120.0	107.5
—													
Algeria . . .	20	20	24	98.0	83.7	110	122	146	197	217	260	90.5	75.6
Egypt . . .	...	2,043	2,071	...	...	43,598	42,591	42,314	77,854	76,055	75,561	102.4	103.0
Eritrea . . .	10	7	18	133.3	56.3	88	66	138	157	118	247	133.3	63.7
Kenya 3) . .	132	164	195	80.5	67.6	2,188	2,279	2,584	3,908	4,070	4,614	96.0	84.7
Tunis 4) . .	37	44	41	83.3	89.7	143	121	117	256	217	209	118.2	122.6
5)													
TOTALS . . .	134,777	139,560	130,810	90.8	108.0	1,063,366	2,072,938	1,754,599	2,970,298	3,701,877	3,133,211	80.2	94.8

\* Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area not yet available. — s) Spring crop (maggengo). — 2) Summer crop (cinquantino). — 1) Calculated, unofficial figure. — 2) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 3) European crop. — 4) Maize and sorghum.

*Egypt*: Although the *nili* maize crop was sown early this year, moisture and excessive irrigation delayed maturation, so that harvesting was started only in early-sown areas in the South of the Delta. Crop condition: 99 on 1 November, against 101 on 1 October 1933 and 101 on 1 November 1932.

*Kenya:* During the month of September in the main areas the early planted maize was on the whole doing very well. The sudden cessation of rain about the middle of the month has decreased the prospects of the later sown crop which at the middle of October was showing the effects of drought again.

*Union of South Africa:* The drought was broken in the first days of November in the Orange Free State, Transvaal and Natal; and subsequently in many districts of Cape Province. Ploughing was begun in the north. In the Orange Free State and Transvaal tractors have been lent by the Union and provincial administrations to farmers who have lost their draught animals. Seed maize is also being supplied on generous credit terms where necessary.

## WORLD RICE SUPPLIES AND MARKETS

### THE EASTERN EXPORTERS.

In the world trade in rice the countries of monsoon Asia naturally play an overwhelmingly preponderant part. On the side of production the situation in the three major exporting countries – Burma, French Indo-China and Siam – is the principal determinative factor.

Despite the continuance of the depression on the rice market the area under padi in Burma has made a further recovery in the current year. According to the first forecast 12,720,800 acres have been sown for 1933-34, an increase of 2.6 % on the corresponding estimate of last year. Taking into account the usual increase in the final estimate with respect to the October estimate, it seems likely, therefore, that the record of 13,022,000 acres attained in 1930-31 may again be touched if not exceeded. Under the pressure of low prices there has, in fact, been a considerable decline in costs of production by more extensive adoption of broadcasting as against transplanting, by great reductions in the price of plough cattle and by other means. This reduction in costs helped to counteract relative scarcity of ready money and has enabled the cultivators to take advantage of the favourable monsoon, which, though late, brought abundant rains allowing agricultural operations to be carried through normally. The very great increase in exports to India this year due to the small crop of 1932-33 in that country, though it did not lead to any striking rise in prices, also created a firmer tendency on the Rangoon market during the period of sowing. The area estimated to have been destroyed is smaller despite the flooding caused by the excessive middle rains in parts of Pegu, Tharrawaddy, Toungoo and other districts. Most of the areas thus affected were, in fact, replanted. The area likely to mature shows, therefore, a larger increase over the corresponding estimate of last year than does the area sown. In mid-October the crop was reported to be generally in good condition and prospects were favourable.

For French Indo-China estimates of area sown are still lacking for Cochin-China and Cambodia, which are responsible for by far the greater part of the export and where sowing is considerably later than in Burma. The crop in Cochin-China is expected, however, to be smaller, there having been a decrease in sowing in the western provinces, where the resources of both landowners and tenants



have been greatly reduced. For Tonkin the production estimate for the crop of the fifth month, harvested in May and June, shows an increase of 6.7 % on the very low figure of last year, while remaining 11 % below the average of the five years ending 1931-32. In Annam the crop of the first semester is considerably larger than both that of last year and the average, while the area sown to the more important crop of the second semester, though slightly below the average, is 20.8 % above the small figure of last year. On the whole the 1933-34 crop in French Indo-China is expected to be late, due largely to delay in transplanting as a consequence of drought, harvesting of the greater part not being expected to take place until toward the end of January. Taking into account also the reports from the main exporting region, the export surplus from the 1933-34 crop is likely to be relatively small.

### Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE							
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34 1932/33 Average 1933		1933/34	1932/33	Average 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34 1932/33 Average 1933	
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100	
Bulgaria . .	14	13	18	107.4	77.8	297	304	349	661	675	776	98.0	85.1
Spain . . .	116	123	119	94.8	98.0	6,531	7,016	6,546	14,514	15,591	14,546	93.1	99.8
Italy 1) . .	313	335	346	93.6	90.5	13,252	14,477	14,611	29,449	32,169	32,468	91.5	90.7
United Stat.	767	869	952	88.3	80.6	16,560	18,270	19,776	36,800	40,600	43,947	90.6	83.7
Korea . . .	4,160	3,824	3,965	108.8	104.9	72,779	64,297	63,443	161,727	142,879	140,981	113.2	114.7
Formosa 2) .	707	700	640	101.0	110.5	15,296	16,731	13,090	33,991	37,180	29,089	91.4	116.9
India 3) . .	74,994	75,132	74,586	99.8	100.5	—	—	—	—	—	—	—	—
Indo-China:													
Annam { 4)	946	981	1,042	96.5	90.8	8,598	7,716	7,953	19,106	17,147	17,673	111.4	108.1
{ 5)	1,421	1,176	1,450	120.8	98.0	...	10,737	11,618	...	23,859	25,817	...	...
Cochin-Ch. .	5,189	5,066	5,177	102.4	100.2	...	44,754	47,635	...	99,451	105,854	...	...
Tonkin 6) . .	...	1,181	1,303	...	...	13,955	13,073	15,687	31,011	29,052	34,860	106.7	89.0
Japan . . .	7,867	7,983	7,874	98.5	99.9	262,984	240,764	242,437	584,396	535,020	538,737	109.2	108.5
Siam . . . 7)	6,749	6,687	...	100.9	...	...	...	...	...	...	...	...	...
{ 8)	(4,008)	(3,535)	...	(113.4)	...	...	...	...	...	...	...	...	...
Syria & Leb	...	...	9)	151.9	224.0	...	7	7	...	16	15	...	...
Egypt . . .	...	489	291	...	...	12,905	12,135	7,984	28,677	26,996	17,743	106.3	161.6

1) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 2) First crop. — 3) First forecast. — 4) First semester. — 5) Second semester. — 6) Rice of the fifth month. — 7) Area planted in 317 districts of the whole Kingdom, including the 35 provinces of the Inner Circles, as at the end of September. — 8) Area planted in the 35 Provinces of the Inner Circles as at the end of August. — 9) Area inferior to 500 acres.

In Siam, as in Burma, the monsoon was late but there, too, thanks to the subsequent plentiful rains, sowings were, according to the report up to the end of September, referring to all but 27 districts, 1 % ahead of those to the same date last year. Allowing, however, for the damage reported to the same date in the respective years, there was a decrease of 1 %, considerable damage having been caused this year by floods. In the majority of provinces the crop was doing fairly well at the beginning of November.

As regards movement of the 1932-33 crop Burma has been favoured this year by the great decline in the Indian crop. Arrivals at Rangoon by rail and boat from 1 January to 28 October were 4,226 million pounds against 3,264 million in the corresponding period of 1932. Shipments from Rangoon to foreign countries amounted to 2,776 million pounds against 3,116 million while those to Indian ports were 1,563 million against 847 million pounds. Total shipments from Rangoon up to 28 October thus amounted to 4,339 million against 3,963 million pounds. Shipments from all ports up to the same date may be estimated at about 5,530 million pounds, the actual amounts for ports other than Rangoon being published a week later than those for Rangoon. In 1932 the corresponding total was 4,854 million pounds. As the final estimate of the export surplus from the 1932-33 crop was 7,728 million pounds of rice and rice products and that of the export surplus from the 1931-32 crop was 6,048 million pounds only about 70 % of the export surplus had been exported this year against about 80 % at the same date last year. Exports to Eastern markets have generally declined, the decreases in those to China and to Japanese territories being especially marked and lesser decreases being noted for Ceylon, British Malaya, the Netherlands East Indies and Egypt. On the other hand the takings of the European market and of the United Kingdom are larger. On the whole, the increased demand from India has not made up for the combined effect of the very large surplus from the last crop and the falling off in the exports to countries other than India. At the end of October about 2,200 million pounds of the 1932-33 crop remained to be exported. In fact, taking the past three months as a whole, the Rangoon market has been relatively inactive, demand both in the East and in Europe having been small, despite the relative cheapness of Burma rice.

Exports from French Indo-China, on the other hand, amounted up to the end of September to 2,314 million pounds against the corresponding total of last year, 2,032 million pounds, an increase of 14 %, and the total surplus of the 1932-1933 crop, estimated at 2,464 million pounds. This increase has been due principally to the great increase this year in the exports to France, which is now well supplied; other buyers have tended to favour Burma and Siam, where they obtain a currency advantage. According to the London Rice Brokers' Association the total of Saigon rice arrived in and afloat for Europe up to 16 November 1933 was 1,133 million pounds against 751 million up to the same date in 1932. From 15 September 1933 the export duties on rice to all destinations have been reduced, those on milled rice and broken by 25 %. It is thus practically certain that the export surplus from the last crop will have entirely disappeared by the end of the calendar year if not by November. This position and the smallness of early arrivals have prevented further fall in prices.

Exports from Siam up to the end of October showed an increase of 10 % over those of the corresponding period of 1932. Up to the end of September those to Japan, the Netherlands East Indies and Europe registered a decline, while there were increases to the Straits, China, India and the West Indies. The total amounted to 3,069 million pounds; this, given the very large exportable surplus of 3,942 million pounds at the beginning of the calendar year left

873 million to be exported in the remaining two months of 1933. It is reported, however, that movement of supplies within the country has been checked by the prevailing political unrest so that some part may remain to be carried over into the new season. In the middle of November one-third of the rice-mills in Bangkok were closed.

Thus in the three major exporting countries together at the end of October the surplus remaining to be exported may be estimated at about 3,100 million pounds against 1,700 million pounds at the same date in 1932. Practically all of this is in Burma and Siam and, given its size, the news of a large crop in the former country in 1933-34 and the internal situation in the latter, it seems probable that these two countries, and especially the former, will be left with a surplus to be carried over into 1933.

Korea and Formosa, though exceeded only by the three principal surplus-producing countries in the quantities they export, are more appositely discussed in connection with the Japanese market, their exports being practically entirely absorbed by the metropolitan country.

#### THE EASTERN MARKETS.

In India (excluding Burma), which is the principal importing market, the area sown for the 1933-34 crop was 62,273 acres against 62,690 acres in 1932-33, a decrease of 0.7 %. Reductions are reported in all the leading provinces save Bihar and Orissa, which last year suffered especially from the unfavourable weather. In Bengal, where the area under winter (*aman*) rice, which occupies about three-fourths of the rice area, has fallen by 0.1%, sowings were on the whole carried out satisfactorily and transplantings were favoured by good precipitation in July, only some districts suffering subsequently from excessive rainfall in the west and from drought in the north. Prospects for this crop, of which harvesting generally begins in the middle of November, were considered at the beginning of that month to be satisfactory. There was also a slight decline in sowings of autumn (*aus*) rice, for which the weather has also on the whole been satisfactory. In Bihar and Orissa the area under winter rice, which is also roughly three-fourths of the total rice area in the province, increased by 3.9 %; weather in most districts has been favourable and crop condition in October was considered, except in certain flooded tracts, to be fair to good, and average outturn was estimated in October at 87 % of the ten-year average. The condition of the autumn crop was also considered in October as fair to good. In Madras sowings up to the end of September were 1.6 % below those reported at the same date last year; rain was insufficient at sowing time. The first crop, now being harvested, was expected to give a normal yield save in certain areas where excessive rains had fallen or where rains had been inadequate; the standing crop was in fair condition at the end of October save in parts of the Deccan and in the north of Arcot, where rain had been lacking. The decline in area sown has been especially pronounced in the Central Provinces and Berar, where it amounted to 6.2 %.

On the whole, though the all-India rice area shows a further slight decline and crop condition is generally reported to be only fair to good, a recovery from

last year's very small production may be expected, with a consequent falling off in the abnormally large quantities that have been taken by the Indian market in the season now ending.

From China it is reported that the crop is a good one, in some areas, like Kiangsi, unusually so, though drought has been reported in the South and some flooding in the Yangtze valley. Net imports of milled and rough rice in the nine months January to September were 3 % smaller than in the corresponding period of 1932. The detailed returns up to the end of September show that French Indo-China and Siam have this year taken the principal parts in meeting China's import requirements, their respective contributions being up to that date respectively 33 % and 28 % greater than in the first nine months of 1932, while Burma, no doubt largely due to the greater absorption by the Indian market, had so far shipped to China an amount equal to only 58 % of that shipped up to September in 1932. On 16 September a new duty of 1 dollar a picul on all foreign milled rice was introduced, while the duty on rough rice was reduced to 60 cents a picul. The Government has the intention of stimulating production by this and other measures with a view ultimately to making China self-supporting. Meanwhile the continued rise in the price of silver thanks to the international agreement of July may be of some assistance to the rice import trade. The competitive power of imported rice is also assisted by the high cost of transport and the numerous local taxes that Chinese rice has to bear.

The crop harvested this year in Java and Madura was 1.8 % smaller than that harvested in 1932, though remaining 3.4 % larger than the average of 1927-31. The relative decrease was less for the production of irrigated padi, which is responsible for over nine-tenths of the total production, than for that of unirrigated padi. In both cases there was an increase in area but though unit-yields in East Java were rather above those of the last year they showed a decline in Middle and West Java. The drastic restriction of the area under sugar-cane has set free much additional land for padi and current plantings show an increase over the corresponding figures for last year. The east monsoon brought heavier rainfall than usual and crops have thereby been greatly benefited. Stocks in the interior were reported in October to be high. Crop movement has been somewhat irregular. Though imports have been controlled since March 1933, the total for the Netherlands East Indies from January to August was slightly higher than in the corresponding period of 1932. Imports of Burma and of Siam rice have fallen, while those of Saigon rice show a great recovery from the low figures of last year. With a view to ensuring the marketing of internal surpluses the control over the distribution of rice between the various provinces has in the last month or two been tightened. Given this control, the large stocks, the larger plantings and the favourable weather, a reduction in imports from abroad may be expected.

Net imports of milled and cargo rice into British Malaya from January to August were 5 % larger than in the corresponding period of 1932. From 17 October 1933 a customs duty of 15 cents per picul has been placed on all rice and padi imported into the Federated Malay States, while from June there has been a duty of 25 cents per picul in Kedah. The sowing and transplanting of the 1933-34 crop has on the whole made good progress, though hindered in parts of

the western States and in Kelantan and parts of Pahang by drought. In some districts the slight rise in rubber also checked planting and at the same time helped to increase demand.

The net imports of milled and rough rice into Ceylon in the nine months ending September were 7 % smaller than those up to the same date last year. The principal decreases are in rough rice from Burma and milled rice from Saïgon.

Production in Japanese territories (excluding the second crop of Formosa, for which an estimate is not yet available) has this season almost attained the record figure of 1930-31. In both Japan and Korea the outturn is very little below that of 1930-31 while the first crop of Formosa, is second only to the record of 1932-33, a season of especially favourable weather. There was a considerable increase in area in Korea, Japan's principal overseas source of supply, and a smaller increase in Formosa for first crop, while in Japan itself the slight decline in area was compensated for by favourable weather. Though the total of the Formosa first crop shows a decline, due mainly to scarcity of water at the time of transplanting, the production of *horai* (Japanese as distinct from native varieties) attained a record. Conditions for the second crop are reported to have been good. In the eight months ending 31 August net imports from Korea had been 18 % larger and net imports from foreign countries were 9 %, larger than in the corresponding period of 1932. Gross imports, which, due to treaty obligations, are mainly from Siam, were, however, somewhat smaller. In consequence of the large carryover from the last season and of this season's bumper crops the estimated supplies available on 1 September, when the new Japanese crop was just coming on the market, were 789 million pounds larger than at the same date in 1932. As a result of the increasing pressure of supplies the Government is faced with a heavy task in its endeavours to maintain prices. Under the new Rice Control Act imports of rice from Korea and Formosa are now also controlled. It has been proposed to reduce the area under the 1934-35 crop by 10 % in all three countries. A large quantity of this season's crop is being purchased by the Government and assistance is being given for the storage of old crop stocks. Quantities of foreign rice are being reexported, sales of old crop Burma rice having already been made in October to Bombay. Various measures of direct provincial assistance to the farmers are also being undertaken.

#### THE WESTERN EXPORTERS.

In all three of the leading minor exporters, the United States, Italy and Spain, production has been smaller this year. In every case there was a considerable reduction in area. In Italy unfavourable weather was an added factor in lowering production: cold weather at time of germination, excessive rains in the weeding period and lessening of the available irrigation water by subsequent lack of rain. The decrease in area and production in Spain is rather a return from the high figures of last year to the average. The fall in area in the United States, which is general, is still more marked and continues the pro-

nounced downward trend from the maximum of 1931-32. In all three countries control measures have been adopted, the United States having introduced regulation of marketing.

In the twelve months ending September 1933 exports of milled rice from Italy, which takes the lead amongst the minor exporters, were 12 % larger than those of 1931-32, those of brown rice were 3 % smaller, while exports of rough rice were almost thrice as large as in the previous season. The principal buyers of milled rice were Austria and Germany, the latter having increased its takings by 81 %; a number of other European countries increased their imports while there was a general falling off in both the South American and Levant markets. For brown rice the principal markets remained France, Switzerland and Yugoslavia, the fall in total being mainly due to the first. The great increase in exports of rough rice is due to Argentina. It is reported that under a new agreement with the German Government Germany will take 138 million pounds of rough rice in each of the next five years and that the sale of a further 33 million pounds in 1933-34 is ensured by an agreement with Austria. For Germany the amount agreed on is equivalent to roughly  $2\frac{1}{2}$  times the actual exports to that country in 1932-33 and for Austria it is somewhat smaller than the 1932-33 figure. With the smaller crop this season and the propaganda for increased consumption in Italy, the increase in the export to Germany would appear to involve a diminution in the quantities exported to other countries.

In Spain, which also gives a bounty on exports, there has, on the other hand, been an aggravation of the position, with an increasing burden of stocks. Exports in the first eight months of 1933 were 70 % smaller than in the corresponding period of 1932. This pejoration is due to the great decline, amounting to no less than 91 %, in exports of milled rice to the United Kingdom.

In Egypt production estimated for 1933-34 shows a further increase of 6.3 %, thanks to the plentifulness of irrigation water and to the favourable weather. Egyptian exports had already reached a considerable figure in the past season, outlets being found particularly in Rumania, Greece and the Near East. Further measures to stimulate exports are being taken by the Government, a decree of 29 October 1933 having allocated a further large sum for export bonuses. To encourage internal consumption the excise duty has been suspended until the end of the current financial year.

Exports from Brazil, the leading exporter in South America, show a great drop in the first eight months of 1923 with respect to those in the corresponding period of last year.

#### THE EUROPEAN MARKETS.

Germany has continued this year to import rough rice in larger quantity than milled rice. The import of rough rice, brown rice and cargo rice, which is principally from Burma, was, however, 28 % smaller in the first ten months of 1933 than in the corresponding period of 1932. That of milled rice, also principally from Burma, was 0.2 % smaller. Exports of milled rice declined by 17 %.

Imports of rice bran were only 32 % of the corresponding figure for last year, due to the heavy monopoly surcharges.

In France the first eight months of 1933 show a great increase in imports, particularly of milled whole rice, flour and bran. This category, which is by far the most important and the great bulk of which is derived from the Colonies and mainly from Indo-China, increased in quantity by 73 % with respect to the first eight months of 1932. Imports of broken, also mainly from Indo-China, increased by 41 %, while those of rough rice, which are derived for by far the greater part from Italy, decreased by 1 %. Exports are mainly to the Colonies, to which increased quantities of broken have been sent this year.

The Netherlands, which are the leading European exporters of worked-up rice, in the first ten months of 1933 imported 28 % more unmilled, principally cargo rice from Burma, than in the corresponding period of 1932. Imports of milled rice, principally from Italy and the United States, there having been a great increase this year in those from the former country, were 48 % larger than in the first ten months of 1932. Exports of unmilled rice were only 25 % of those in the corresponding period of last year and those for milled rice, which are principally to Germany, 68 % ; the latter were affected especially by the fact that the United Kingdom took less than 6 % of the quantity taken up to October in 1932. Imports of broken, mainly from Burma and Siam, of flour and of bran also decreased as also the exports of these categories. From 14 August 1933 a duty of 1 guilder per 100 kilos was placed on imports of rice and rice products, which were to be permitted only by the Central Grain Institute, which maintains a monopoly.

The United Kingdom in the ten-month period decreased its total rice imports by 10 % ; those from Spain were only 7 % of the corresponding quantity for 1932 and those from the United States only 37 % ; on the other hand imports from British India, thanks to the preferential duty increased by 29 %. There was a considerable increase in unworked-up reexports and a decrease in exports of rice milled in the United Kingdom.

In October 1933 Poland also introduced higher import duties on rice, which are, however, greatly restricted in their action by the M. F. N. clause.

#### GENERAL OUTLOOK.

A general survey of the situation indicates that there will be a large carryover in Burma and Siam, mainly in the former, at the end of the current commercial season in December. As in Burma the first indications are for another large crop the surplus available for export from that country in 1934 is likely to be a very large one. In French Indo-China, on the other hand, there will probably be no surplus to be carried over and the new crop is likely to be a small one. In the three major exporters together, however, the total carryover will be much larger than last year. The probability of a normal crop in India in 1933-34 will make the marketing of a surplus much more difficult for Burma in the coming year than in 1933, particularly as China is reported to have had a good crop and

supplies in the Netherlands East Indies are good. Some alleviation of this situation may be hoped for in the possibility of higher purchasing-power in British Malaya and Ceylon, which depends on better prices for their plantation crops. French Indo-China has come to rely principally in the French market for the absorption of its surplus and the situation in Eastern markets makes a continuance of this dependence probable in the coming year. Japan is faced with very large supplies from its own territories and is likely to continue operations as a reexporter in the near future.

Amongst the producers of Europe and America reduction of area was general in the past season and control of exports is the order of the day. Italy seems to have assured its position in the markets by means of quota agreements. The market position of Spain is very difficult. Amongst the new exporting countries Egypt is in particular striving to secure a place in the markets by means of intensified Government assistance.

Of the four great importing countries of northwestern Europe France and the Netherlands have increased their imports but Germany and the United Kingdom have shown a decline. All four countries have registered a decline in reexports so that it is not improbable that there will be a falling-off in their takings of rice in the near future.

Taking the situation as a whole, therefore, the available information does not give reason to expect any improvement in the rice market. On the contrary, the difficulties of international trade in the commodity appear to be augmenting.

C. J. ROBERTSON.

## RICE

*British Malaya* : Rainfall in September was below average in most parts of the Peninsula, the weather being in general hot and dry for the first three weeks with rain during the last week ; in South Kedah, however, showers were more frequent and more evenly distributed and in Malacca and on the coast of Negri Sembilan the rainfall was normal for the month.

Planting had progressed well in Kedah, Province Wellesley and Krian but in some parts of Perak and in Kuala Selangor it had been delayed by drought and areas already planted had suffered from lack of water. In the coastal area of Malacca more favourable weather enabled planting to be nearly completed.

Harvesting of short-term padi was in progress in the inland districts of Selangor and on the whole good crops were being obtained. In Johore, where planting takes place at very different times even in the same locality and the mixed strains of padi used vary much in their maturation period, ripening is very uneven and the crop has suffered severely in places from the ravages of birds.

*India* : In Bengal there was only light to moderate rain in October. Prospects for the standing crops were satisfactory at the beginning of November and preparatory tillage and sowing for spring crops was in progress.

Precipitation in Bihar and Orissa was heavy and general in the latter part of October, standing crops were reported to have benefited. The first week of November was dry.



Crops were then reported to be in good condition and winter rice prospects were fair. In the Patna district, however, more rain was needed, while in Darbhanga the hill streams had flooded the padi fields and much damage was feared. Threshing of *bhadoi* had begun by the end of October.

In Madras precipitation varied greatly in October. In some districts it remained under the average, particularly in parts of the Deccan and in North Arcot, where the crops were suffering from lack of rain. Flooding occurred in parts of the Circars. On the whole, however, condition of standing crops was fair. Sowing and transplanting were proceeding in the first week of November.

In the United Provinces standing crops were doing fairly well at the end of October but there had been damage by rain in 22 districts, by hail in the Naimtal, Almore and Saharanpur districts and by insects in Allahabad.

Weather in the Central Provinces had been cloudy with some rain in the latter part of October but the first week of November was clear and cool. The crop was in good condition. Harvesting of early rice was proceeding and yield was expected to be above normal. In Jubbulpore and Balaghat there had been some slight damage to harvested rice.

From Assam it was reported in mid-November that weather had been seasonable and that crop prospects and yield were fair.

In Bombay standing crops were doing well at the end of October and harvesting was proceeding save in Konkan and Karnatak, where heavy rain had been a hindrance. Elsewhere rain had been at most only light and scattered.

*Indochina* : While the area of rice plantations in Cochin-China in the current season is officially estimated to be about equal to that of last year and to the previous average, a report issued by the Chamber of Agriculture of this Colony based on an inquiry made at the beginning of September estimates that about one million acres of rice plantations have been abandoned by growers discouraged by low market prices. According to this estimate, the area actually cultivated should be about one-fifth smaller than that of last year.

*Japan* : At the beginning of November the weather conditions were favourable to rice.

*Siam* : According to the second report of the Department of Agriculture, issued at Bangkok on 14 October 1933, the area planted with rice as at the end of August 1933 in the 35 Provinces of the Inner Circles was 4,008,000 acres, compared with 3,535,000 acres at the same time last year, an increase of 13.4 %. The extent of damage was 119,800 acres, or about 3 %, of which 116,600 was by flood, 1,600 by insufficient water, 1,400 by crabs and 200 by insects. There was, however, sufficient time for resowing in some places. At the beginning of September 1933 crop condition in the Inner Circles was doing well in 25 provinces, fairly well in 7 provinces, and not doing well in 3 provinces.

According to the third report issued at Bangkok on 10 November, the area planted at the end of September in 317 districts of the whole Kingdom, including the 35 provinces of the Inner Circles, was 6,749,000 acres, as against 6,687,000 acres at the same date last year, an increase of 0.9 %. Reports were still missing from 27 districts, which had last year an acreage of 415,000 acres. The damage reported was 228,000 acres, compared with 67,000 acres last year, and was caused mostly by flood.

*Egypt* : Where sowing had been early, harvesting of *sefi* rice started earlier than last year. The early-sown areas have finished harvesting. Maturation of late-sown

areas is drawing near completion. Owing to adequacy of water supply and weather conditions, the yield per acre is expected to be 4 % above the average. Crop condition : 104 on 1 November against 103 on 1 October 1933 and 104 on 1 November 1932. The *nili* rice crop is advancing towards maturity. Harvesting of limited areas has started. The yield per acre is expected to be 6 % above the average. Crop condition : 106 on 1 November against 100 on 1 October 1933 and 109 on 1 November 1932.

## POTATOES

*Austria* : At the end of October, lifting of potatoes had been nearly finished everywhere. Yields were not altogether satisfactory. The tubers are generally small.

*Estonia* : Production is very good both in quantity and quality. The tubers are well developed and rich in starch.

*Irish Free State* : The summer was dry and had a slightly adverse effect on crops. The yields of potatoes were, nevertheless, up to average of an ordinary season.

*France* : Lifting was completed under good conditions. Results confirm the opinion given last month, being quantitatively small and varying greatly from district to district.

*Great Britain and Northern Ireland* : In England and Wales October was on the whole a favourable month for agriculture. During the first three weeks the weather was generally mild with some rain which was beneficial to the crops. During the last week there was a colder spell with snow in some parts of the country followed by rain. Some frosts were experienced, but no great damage has been done. By the end of October the lifting of potatoes had been completed in most areas. Tubers are rather on the small side but the crop was generally secured in a clean and dry condition. Little disease is reported.

In Northern Ireland the weather was very suitable for the lifting of potatoes and, except in a few districts, this work was completed before the end of the month. The quality generally of the crop is good but the yields from main crop varieties particularly have been below average.

In Scotland, the potato harvest, favoured by dry, open weather was carried out very expeditiously and a large part of the crop was secured in unusually dry and clean condition.

*Italy* : According to reliable forecasts, production of potatoes should be smaller than in 1932 ; the area under the crop this year was slightly smaller than that of last year.

*Lithuania* : Lifting of potatoes has been carried out under good conditions ; owing to excessive rains at the end of September and the beginning of October, however, part of the potato crop (10 %) has rotted.

*Poland* : Lifting of potatoes was effected under generally favourable conditions.

*Czechoslovakia* : Lifting in the lowlying areas has generally been completed ; in the higher it will soon be ended or is now in progress. The crop is satisfactory in weight, the tubers being mostly small due to the drought.

## Potatoes.

COUNTRIES	AREA					PRODUCTION									
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933			
				1932	Average							1932	Average		
														1932	Average
			= 100	= 100	= 100			= 100							
1,000 acres					1,000 centals					1,000 bushels of 60 lbs					
Germany (e)	606	624	593	97.1	102.2	66,489	61,789	62,078	110,814	102,980	103,462	107.6	107.1		
Austria (m)	6,532	6,490	6,388	100.7	102.3	895,291	966,668	863,260	1,492,123	1,611,082	1,438,738	92.6	103.7		
Belgium . .	519	500	467	103.8	111.2	58,670	58,777	58,765	97,781	97,960	97,940	99.8	99.8		
Bulgaria . .	404	435	415	92.7	97.2	79,226	97,864	76,679	132,041	163,103	127,797	81.0	103.3		
Spain . .	37	37	29	100.0	128.9	1,698	2,134	1,000	2,829	3,556	1,667	79.6	169.7		
Estonia . .	976	1,033	889	94.5	109.8	91,411	110,799	92,242	152,348	184,662	153,734	82.5	99.1		
*Irish F. State	169	166	165	102.1	102.5	19,513	17,258	16,374	32,521	28,762	27,289	113.1	119.2		
Finland . .	352	348	357	101.3	98.7	...	67,545	53,607	...	112,576	89,343	...	...		
France . .	200	190	176	105.2	113.6	27,337	21,680	17,978	45,561	36,133	29,963	126.1	152.1		
*France . .	3,419	3,492	3,573	97.9	95.7	...	363,410	331,525	...	605,671	552,531	...	...		
Engl. a. W.	518	504	479	102.8	108.3	73,987	74,099	68,777	123,312	123,499	114,626	99.8	107.6		
*Scotland . .	153	149	137	103.0	111.3	...	25,581	20,366	...	42,635	33,943	...	...		
*N. Ireland . .	139	142	146	98.0	95.1	...	25,218	21,906	...	42,031	36,509	...	...		
Greece . .	1) 46	38	27	121.4	171.6	1) 899	1,865	962	1) 1,499	3,109	1,604	48.2	93.4		
Hungary . .	735	738	674	99.6	109.0	44,946	34,336	39,386	74,908	57,226	65,642	130.9	114.1		
*Italy 2) . .	987	1,022	871	96.6	113.3	...	62,251	41,277	...	103,750	68,793	...	...		
Latvia . .	257	253	216	101.7	118.9	25,648	26,569	19,323	42,746	44,280	32,204	96.5	132.7		
*Lithuania . .	441	428	356	103.0	123.7	...	42,302	34,534	...	70,503	57,556	...	...		
Luxembourg .	41	41	40	99.8	100.3	3,977	4,854	4,078	6,628	8,091	6,796	81.9	97.5		
Malta . .	7	7	7	95.6	97.9	451	564	645	752	941	1,075	80.0	70.0		
Norway . .	120	123	119	97.3	100.7	20,564	22,818	17,620	34,273	38,029	29,366	90.1	116.7		
Netherlands .	379	435	425	87.1	89.3	60,032	81,130	72,255	100,051	135,215	120,423	74.0	83.1		
Poland . .	6,792	6,709	6,410	101.2	106.0	621,706	660,827	652,888	1,036,155	1,101,357	1,088,125	94.1	95.2		
*Rumania . .	484	471	491	102.8	98.7	...	35,488	43,773	...	59,145	72,954	...	...		
Sweden . .	327	338	340	96.7	96.0	37,898	47,039	34,432	63,161	78,397	57,386	80.6	110.1		
Switzerland .	117	115	116	101.9	101.1	16,700	14,438	15,368	27,833	24,063	25,613	115.7	108.7		
Czecho- (e)	96	94	79	102.0	121.1	6,832	7,533	6,612	11,387	12,555	11,020	90.7	103.3		
slov. (m)	1,735	1,718	1,695	101.0	102.4	169,586	196,975	206,441	282,637	328,286	344,062	86.1	82.1		
Canada . .	528	521	574	101.2	92.0	41,542	39,416	47,426	69,237	65,693	79,041	105.4	87.6		
United States	3,223	3,371	3,208	95.6	100.5	190,800	214,607	220,269	318,000	357,679	367,116	88.9	86.6		
*Syria a. Leb.	17	18	17	92.3	96.5	...	790	1,091	...	1,317	1,819	...	...		
Algeria (m)	31	25	26	125.1	120.1	1,102	1,015	937	1,837	1,691	1,561	108.6	117.7		
TOTALS . .	24,395	24,505	23,557	99.5	103.5	2,556,805	2,765,054	2,595,795	4,280,434	4,608,349	4,326,250	92.5	98.5		

\* Countries not included in the totals. — e) Winter, so-called early, potatoes. — m) Main season crop. — 1) Unofficial estimate (calculated). — 2) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey.

*Algeria*: Planting of early winter potatoes has been greatly delayed by drought, which hindered the preparation of the land.

*Tunis*: The drought at the end of October still hindered the planting of early potatoes, which was in progress.

## SUGAR SEASON

In the countries in which the lifting of sugar beet had not yet commenced and in those in which operations were in progress, weather conditions in October and the first half of November were in general favourable to the last stage of growth in the former group and to lifting operations in the latter.

The weather was on the whole mild and rainfall was sufficient for the needs of growth but not excessive enough to reduce the sugar content of the bulbs ; in Spain, Great Britain, Yugoslavia and Switzerland, too abundant rainfall was prejudicial to sugar content but only in isolated cases. Lifting of the beet was effected normally ; rains in most of the European countries did not hinder field

*Sugar-beet.*

COUNTRIES	AREA					PRODUCTION											
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933					
				1932	Average							1932	Average				
														1931	Average	1931	Average
1,000 acres				1,000 centals				1,000 short tons									
Germany . .	751	669	1,091	112.3	68.9	170,809	173,628	259,767	8,540	8,681	12,988	98.4	65.8				
Austria . .	115	105	81	108.9	142.4	23,656	22,495	18,035	1,183	1,125	902	105.2	131.2				
Belgium . .	131	132	149	99.1	88.1	35,058	38,274	38,414	1,753	1,914	1,921	91.6	91.3				
Bulgaria . .	27	28	45	97.3	60.2	4,098	3,882	5,893	205	194	295	105.6	69.5				
*Denmark. .	106	94	91	113.1	117.0	...	31,581	22,649	...	1,579	1,132	...	...				
Spain . . .	193	209	185	92.1	104.1	49,604	44,859	42,920	2,480	2,243	2,146	110.6	115.6				
Finland . .	7	6	5	116.0	128.6	1,102	1,110	847	55	56	42	99.3	130.1				
*France . .	649	658	644	98.6	100.7	...	167,340	151,187	...	8,367	7,559	...	...				
*Engl. & W.	364	255	242	142.7	150.5	...	49,874	42,613	...	2,494	2,131	...	...				
*Scotland . .	2	1	3	270.6	56.1	...	114	374	...	6	19	...	...				
Hungary . .	108	105	167	103.5	64.6	20,477	18,717	30,545	1,024	936	1,527	109.4	67.0				
*Italy 1) . .	211	207	268	101.6	78.7	...	54,991	58,744	...	2,750	2,937	...	...				
*Latvia . . .	32	20	—	157.4	—	5,071	—	—	254	—	—	...	...				
Netherlands	117	99	141	117.8	82.9	35,885	34,613	41,192	1,794	1,731	2,060	103.7	87.1				
*Poland . .	246	287	499	85.9	49.4	...	52,439	92,469	...	2,622	4,623	...	...				
*Rumania . .	105	45	127	231.8	83.0	...	6,679	19,229	...	334	961	...	...				
Sweden . .	124	101	91	122.7	136.4	35,825	34,261	21,814	1,791	1,713	1,091	104.6	164.2				
Switzerland.	4	3	3	114.3	116.6	1,213	1,142	955	61	57	48	106.1	126.9				
Czechoslov.	358	361	594	99.4	60.3	71,358	87,335	141,345	3,568	4,367	7,067	81.7	50.5				
*U.S.S.R. . .	2,965	3,123	2,282	94.9	130.0	...	...	233,647	...	...	111,682	...	...				
Canada . .	42	45	48	93.3	87.0	8,380	9,000	8,452	419	450	423	93.1	99.1				
United St. .	969	764	708	126.8	136.8	224,000	181,400	157,084	11,200	9,070	7,854	123.5	142.6				
TOTALS. . .	2,946	2,622	3,308	112.2	88.9	681,465	650,716	767,263	34,073	32,537	38,364	104.7	88.8				

\*) Countries not included in the totals. — 1) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey.

work and were, on the contrary, frequently helpful. The beet are generally in suitable condition and have in most cases been delivered to the factories in quantities corresponding to manufacturing capacity.

The beet situation has, in general again improved since the end of September.

In the U. S. S. R., the area on which lifting has begun, according to information published in the Soviet press, closely approaches that anticipated in the plan ; the quantity of beet harvested, on the contrary, differs to a much greater extent.

Since the publication of the October Crop Report, the first estimates of beet sugar production have been somewhat modified. Owing principally to more favourable weather conditions and the good progress of lifting operations,

the changes made in the first estimates are mostly increases. Among the largest changes are: that for Germany, transmitted to the Institute by the German Sugar Industry Union, which brings an increase on the figure of last month; for Bulgaria, transmitted by the general Direction of Statistics, showing a very large increase on the preceding estimate; for Finland; for the Netherlands, transmitted by the Direction of Agriculture; for Rumania and for Yugoslavia.

For Italy we published last month the estimate sent to the Institute by the « Consorzio Nazionale Produttori Zuccheri », whereas in this Report the figure, exceeding that of last month, was calculated on the basis of the figures of production at the end of October, transmitted to the Institute by the Ministry of Finance.

*Production of Beet-sugar (raw).*

COUNTRIES	PRODUCTION 1 SEPT. - 31 OCT.		TOTAL PRODUCTION DURING THE SEASON				
	1933-34	1932-33	1933-34 1)	1932-33	Average 1927-28 to 1931-32	% 1933-34	
	thousand cents	thousand cents	thousand cents	thousand cents	thousand cents	1932-33 = 100	Average = 100
Germany . . . . .	10,806	8,511	29,863	23,996	42,619	124	70
Austria . . . . .	1,282	1,100	4,079	3,635	2,873	112	142
Belgium . . . . .	...	...	4,993	5,677	5,604	88	89
Bulgaria . . . . .	583	524	743	590	810	126	92
Denmark . . . . .	...	...	4,982	3,995	3,156	125	158
Spain . . . . .	...	...	5,732	5,136	5,945	112	96
Irish Free State . . . . .	84	32	563	574	408	98	138
Finland . . . . .	46	42	141	127	79	111	180
France . . . . .	6,344	5,757	20,062	22,421	20,809	89	96
Great Britain . . . . .	3,630	1,876	9,612	7,399	6,104	130	157
Hungary . . . . .	20	20	2,425	2,279	4,467	106	54
Italy . . . . .	8,555	6,794	8,598	7,123	8,511	121	101
Latvia . . . . .	...	...	772	600	142	129	543
Netherlands . . . . .	...	...	5,853	5,071	5,662	115	103
Poland . . . . .	...	...	9,192	9,192	15,553	86	51
Rumania . . . . .	...	...	2,645	1,102	2,828	240	93
Sweden . . . . .	...	...	6,382	5,189	3,343	123	191
Switzerland . . . . .	73	30	163	152	140	107	116
Czechoslovakia . . . . .	...	...	11,262	13,980	23,377	81	48
Turkey in Europe . . . . .	...	...	705	359	153	197	460
Yugoslavia . . . . .	...	...	1,508	1,869	2,336	81	65
<i>Total Europe a) . . . .</i>	—	—	129,020	120,466	154,919	107	83
*U. S. S. R. . . . .	4) 7,716	4) 5,291	...	22,046	28,809	...	...
<i>Total Europe b) . . . .</i>	—	—	—	—	—	—	—
Canada . . . . .	—	—	1,389	1,500	902	93	154
United States . . . . .	—	—	33,621	29,183	23,811	115	141
<i>Total North America . . . .</i>	—	—	35,010	30,683	24,713	114	142
Japan . . . . .	—	—	626	592	552	106	113
Turkey in Asia . . . . .	—	—	340	246	84	138	405
<i>Total Asia . . . .</i>	—	—	966	838	636	115	152
<i>GENERAL TOTALS { a) . . . .</i>	—	—	164,996	151,987	180,268	109	92
<i>                                  b) . . . .</i>	—	—	—	—	—	—	—

\* ) Countries not including in the totals. — a) Not including the U.S.S.R. — b) Including U.S.S.R. — 1) Approximate data. — 2) To the end of September. — 3) Average 1928-29 to 1931-32. — 4) Factory production of "Glavsakhar".

The production estimates sent by the Ministries of Agriculture of the Irish Free State and Czechoslovakia are smaller to a still larger extent than those of last month. The decrease in the second compared with the first estimate for Czechoslovakia is to be attributed to the continuance of the summer drought into the autumn, reducing beet production below the first estimate, which was already low.

Information for the U. S. S. R., is still too inadequate to permit an estimate of probable production.

*The figures in the following table  
are supplied by the " Association Internationale Sucrière " of Vienna.*

COUNTRIES	Sugar beet		Raw sugar	
	1933	1932	1933-34	1932-33

THOUSAND CENTALS				
Germany . . . . .	177,078	149,229	29,863	23,996
Austria . . . . .	23,493	22,405	3,859	3,635
Belgium . . . . .	35,274	42,108	5,181	5,829
Denmark . . . . .	31,747	28,096	5,071	4,228
Irish Free State . . . . .	5,439	3,272	622	590
Finland . . . . .	1,191	1,173	154	140
Hungary . . . . .	17,417	15,466	2,439	2,280
Italy . . . . .	45,195	50,729	6,482	7,055
Poland . . . . .	44,919	51,961	7,804	9,192
Sweden . . . . .	38,405	33,481	6,378	5,189
Czechoslovakia . . . . .	61,514	78,907	11,262	13,980
Turkey . . . . .	6,834	2,394	970	400
Yugoslavia . . . . .	10,176	14,228	1,508	1,869
TOTAL . . . .	496,682	493,449	81,594	78,383

SHORT TONS				
Germany . . . . .	8,853,758	7,461,354	1,493,137	1,199,792
Austria . . . . .	1,174,600	1,120,228	192,960	181,768
Belgium . . . . .	1,760,000	2,105,000	259,027	291,432
Denmark . . . . .	1,590,000	1,404,800	250,000	211,390
Irish Free State . . . . .	172,000	163,584	31,100	29,522
Finland . . . . .	60,000	58,663	8,000	6,996
Hungary . . . . .	870,000	773,304	121,960	113,990
Italy . . . . .	2,260,000	2,536,000	324,000	353,000
Poland . . . . .	2,245,900	2,598,025	390,000	459,589
Sweden . . . . .	1,920,000	1,674,040	318,900	259,425
Czechoslovakia . . . . .	3,075,643	3,945,278	563,087	698,967
Turkey . . . . .	340,000	119,686	49,000	19,975
Yugoslavia . . . . .	508,801	711,368	75,382	93,452
TOTAL . . . .	24,830,702	24,671,330	4,076,553	3,919,298

The figure of production in 1933-34 for Turkey in Asia does not include the production of the Eskisehir factory which has this year entered into activity for the first time and began to manufacture on October 20. For this factory, production is at present forecast to nearly equal that of Usciak, which until now, has been the only factory in operation in Turkey in Asia and is included in the table.

In the table published in this Report we have inserted the figure of production of beet sugar in Japan transmitted by telegram by the Japanese Government, which, together with that for Turkey, gives a total for Asia in view of the fact that these two countries are the sole producers of beet sugar on the continent.

With the changes now introduced in the table, the total production of sugar this year for the whole of the European countries producing sugar beet, except the U. S. S. R., is 7 % larger than that of last year

The estimates of production for North America have not been considerably changed since the publication of the last Crop Report.

E. R.

\* \* \*

*Austria* : The foliage of sugar beet has for a long time remained fresh and vigorous. For this reason lifting has been greatly delayed. Despite this fact, the bulbs have not reached normal size and leave much to be desired from the point of view of sugar content. Lifting was delayed by rainy, misty weather. Transport of the bulbs has been effected fairly rapidly.

*Irish Free State* : The summer was dry and had a slightly adverse effect on crops. The yields of sugar beet were, nevertheless, up to average of an ordinary season.

*France* : Lifting was carried out under good conditions and was nearing completion toward 15 November. Fairly regular rains fell after the beginning of October and increased weight of the roots without being too heavy to hinder pulling and transport. The roots are generally clean and have good density but the weight often leaves much to be desired.

*Great Britain and Northern Ireland* : October was on the whole a favourable month for agriculture in England and Wales. During the first three weeks the weather was generally mild with some rain which was beneficial to the crops. During the last week there was a colder spell with snow in some parts of the country followed by rain. Some frosts were experienced, but no great damage has been done. Considerable progress has been made with the lifting of sugar beet. The sugar content of the crop lifted before the break in the drought was good but there was some falling off in respect of the crop lifted recently.

In Scotland, the lifting of sugar beet was in progress at the end of the month ; the roots are of good size and the sugar content is said to be satisfactory.

*Poland* : Lifting of sugar-beet was affected under generally favourable conditions.

*Czechoslovakia* : Lifting of the beet in the more lowlying districts has generally been completed ; in the more elevated districts it will soon be ended or is now in progress. The crop is not so good as that of last year or the average as regards weight but sugar content is higher.

*U. S. S. R.* : According to the plan, the lifting of sugar-beet should have been finished by 10 November but the latter had not been completely carried out in any beet producing area. According to the information published in the Soviet press, lift-

ing had on 10 November been effected on the collective farms (*kolkhozi*) and on the individualistic farms (the State farms or *sovkhhozi* being thus excepted), on an area of 2,548,000 acres or 92.8 % of the plan. In Ukraina and the Central Black Earth region, in which, according to the plan, lifting should have been finished on 1 November, the area on which lifting had been effected on 10 November represented 93 % of the plan in Ukraina and 96.6 % in the Central Black Earth regions.

The quantity of sugar-beet harvested of the 2,548,000 acres indicated above is estimated at 160,330,000 centals (8,016,000 short tons), or 62 % of the figure planned.

The yield per acre is consequently forecast at about 63 centals per acre. In Ukraina the harvest plan has been executed to the extent of 57 %. The low yield per acre is partly explained by careless lifting; in fact, in many cases a second clearing of the fields has resulted in an increase of yield of 9-18 centals of beet per acre. An active campaign is being carried out for second clearing of the fields in all cases where the first clearing is considered to have been effected carelessly.

Transport of the beet to the factories is hindered by inadequate means of transport. On 10 November over 44,093,000 centals (2,205,000 short tons) of beet still remained in the fields.

*Antigua* : The crop benefited from good rains in September.

*British Guiana* : As a consequence of the lowered sucrose content of the juice due to the previous heavy rains, grinding of the autumn crop was postponed until October in hope of sugar yields benefiting by the dry weather.

*Trinidad* : The wet season has been unusually pronounced. Crop condition is, however, regarded as satisfactory.

*India* : In the most important cane tract, the United Provinces, the crop had at the end of October suffered from excessive rain and floods. Elsewhere, however, weather had been favourable and condition of the crop was reported to be good. In the Central Provinces in the first decade of November yield was expected to be above normal.

*Java* : Cane-sugar production for the season 1933-34 will be about 12,125,000 centals (606,000 short tons) against 30,778,000 (1,539,000) in 1932-33 and 61,846,000, (3,092,000) in the average of the five years ending 1931-32. Percentages 39 and 20.

*Egypt* : Early-sown areas of sugar cane are entering on maturity. Cutting of limited small areas has started for local consumption. The yield is expected to be a little above the average. Crop condition as on 1 November was estimated at 103, as on 1 October 1933 and on 1 November 1932.

*Mauritius* : Sugar production for the season 1933-34 is forecast at 5,049,000 centals (252,000 short tons) as against 5,450,000 (273,000) in 1932-33 and 4,826,000 (241,000) the average for the preceding quinquennium. Percentages : 92.6 and 104.6.

*Union of South Africa* : Weather in September was hot and dry in the sugar belt, the rainfall being only approximately half the normal for the month. Average crop condition was 15 % below normal.

*Hawaii* : Production of cane sugar for the season 1933-34 will be about 20,580,000 centals (1,029,000 short tons) against 20,184,000 (1,009,000) in 1932-33 and 8,579,000 (946,000) on the average of the five years ending 1931-32. Percentages 102 and 109.



## VINES

The vintage had been completed everywhere at mid-November. From October 15 onward, operations were frequently hindered by rains, which were detrimental to quantity and quality in Central and Danubian Europe, where ripening of the grapes was already greatly in delay.

The information received since last month, brings on the whole, an increase in the deficit forecast. Italy anticipates a crop comprised within the limits of only 750 million Imperial gallons (900 million American gallons) to 790 million (950 million) and the production of central and Danubian Europe promises to be smaller by nearly one fifth then that of last year, which was average.

*Vines.*

COUNTRIES	AREA					PRODUCTION									
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933			
				1932	Average							1932	Average		
														= 100	= 100
1,000 acres					1,000 Imperial gallons			1,000 Amer. gallons			= 100	= 100			
Germany	206	205	202	100.7	102.1	...	37,873	49,068	...	45,482	58,927	...	...		
Austria 1)	67	66	77	100.7	86.2	16,177	23,708	18,307	19,427	28,471	21,986	68.2	88.4		
Bulgaria 2)	229	222	208	102.8	110.0	61,703	57,722	42,503	74,100	69,318	51,043	106.9	145.2		
Spain 1) 2)	3,541	3,526	3,482	100.4	101.7	410,087	466,077	495,867	492,478	559,716	595,492	88.0	82.7		
France 3)	4) 3,843	3,808	3,761	100.9	102.2	526,549	426,615	560,046	632,338	512,326	672,565	123.4	94.0		
Greece 1) 2)	...	344	289	...	...	5) 50,959	83,911	52,998	5) 61,197	100,769	63,646	60.7	92.2		
Italy 6) 7) (u)	2,358	2,433	2,107	96.9	111.9	813,909	1,016,236	863,127	977,432	1,220,408	1,036,538	80.1	94.3		
Luxemb. 1) 2)	3	3	3	85.8	78.8	1,245	891	1,361	1,495	1,070	1,635	139.7	91.5		
Switzerland	33	32	33	103.1	99.5	...	9,107	12,148	...	10,937	14,588	...	...		
Czechoslov.	49	47	43	103.5	113.5	7,479	9,547	7,588	8,982	11,465	9,077	78.3	99.0		
Syria & Leb.	131	130	117	100.3	111.8	—	—	—	—	—	—	—	—		
Algeria . .	929	914	710	101.6	130.8	351,961	402,872	292,393	422,673	483,813	351,138	87.4	120.4		
Tunis 2) . .	99	99	77	100.0	127.7	35,197	37,616	19,145	42,267	45,173	22,992	93.6	183.8		

u) Unmixed crop. — m) Mixed crop. — 1) Area bearing. — 2) Production of must. — 3) The data of production refer to the four principal producing departments. 4) — Approximate figure calculated on the basis of the June estimate and taking into account the reduction of 198,000 acres made in the 1932 estimate. — 5) Unofficial estimate. — 6) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 7) Calculated from production of grapes for wine.

The total production of the northern hemisphere should be contained within the limits 3,100 million Imperial gallons (3,700 million American gallons) and 3,200 million (3,800 million) and should be one of the smallest, if the not actually the smallest of the last ten years, hardly exceeding the exceptionally poor crop of 1926.

The trade situation for the season is relatively good, with the exception of the countries of Danubian Europe where over-production has become endemic

and the abundance of stocks has completely cancelled the effect of a deficient crop and also of the countries such as Greece and Portugal where the viticultural industry has turned particularly towards export.

In the other countries, particularly in the three principal producers, France, Italy and Spain, supplies are rather below requirements for consumption. Stocks carried over from the previous crop have been largely absorbed by untaxed family consumption, owing to the low sale value of the products and legislative measures which have imposed a minimum degree on wines entering into commerce; in Italy, part of the wines remaining, in relatively larger quantity than usual, have been improved by re-fermentation with the addition of fresh must; in France, the concentration of musts permits a similar operation for weak wines of the new crop.

In general, legislation tends to reduce the volume of merchantable production by improving quality. The growth of consumption of fresh table grapes, which is quite marked in Italy and France, also reduces, to a small extent, the volume of wine production.

The quality of this year's products will, moreover, facilitate their sale, but in compensation, there is reason to anticipate a new decrease in the production of alcohol, stocks of which are abundant.

The export trade should again decrease, despite the sometimes fairly favourable conditions.

The importing viticultural countries of Central Europe, particularly Switzerland, should, despite the crisis, apparently absorb a quantity a little larger than that of last year owing to their relatively small production or to the rather mediocre quality of the product. As regards France, the good quality of the wines produced and the fall in prices on the home market will restrict foreign importers and probably prevent the attainment of the import quotas agreed upon with Spain, Greece and Italy, but imports should nevertheless be maintained at a fairly high level. These favourable factors do not, nevertheless, seem adequate to compensate for the effect of the regression in consumption in the non-producing importing countries of Europe.

The United States, moreover, has so severely restricted imports of wine and alcohol that the re-opening of this market will this season again give no encouragement to the export trade of the viticultural countries. The stocks accumulated at the depôts, together with the rather deficient home production, largely suffice to meet home requirements for consumption.

Despite the restriction of foreign markets, the wine trade situation in the principal viticultural countries, particularly in France and Italy, is markedly better than last year. The course of the season was fairly regular and activity in the first two months was generally greater without, however, being normal. Prices, which have been established at approximately the same level in the principal producing countries, are firm with a tendency to rise.

Information is lacking on the viticultural situation in the principal countries of the *southern hemisphere* and it is too early to establish a preliminary estimate.

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*Austria* : Due to the incomplete ripening of the grapes this year the vintage is very late. In many districts it began only in mid-October. The yield remains very much below that of last year both quantitatively and qualitatively. On 1 November crop condition was 2.9 against 3.0 on 1 October 1933 and 2.2 on 1 November 1932.

*Spain* : The latest information on the results of the vintage, which was completed towards the end of October, does not justify any change in the preliminary official estimate published two months ago before the vintage and very slightly modified last month; the latter, on the contrary, is confirmed to be exact.

Trade activity slackened in the latter half of October and at the end of the month the market was nearly generally quiet. Sales for home consumption are small owing to numerous factors affecting the exchange. Exports are lower; prices of Spanish wines on the one hand, the good quality of French wines on the other, at the moment render exports to France difficult; as regards the United States, the terms granted to the Spanish producers by North-American importers checked all trade, even before the American decree prohibiting wine imports.

Despite the small size of the production and its good quality, which should assure its sale, the trade season 1933-34 promises to be irregular and difficult owing to external factors.

*France* : The weather between 10 October and 10 November was, on the whole, rainy and mild. In the South, new floods occurred, damaging the vineyards and often hindering tillage; growth of the vines was still vigorous in a number of places; this abnormal weather was rather unfavourable. In the other regions the weather was, on the contrary, favourable for the lignification of the shoots.

The vintage was rather delayed by rains in some central areas but was finished towards the end of October under good conditions.

The first results known for the South somewhat reduce the deficit forecast, as the largest producing department, Hérault, should, with nearly 240 million Imperial gallons (290 million American gallons), have a production exceeding, by over 50%, that of last year which was very small and little below (by 11 to 12 %) that of 1931, which was average. The present level of forecasts for the other three large producing departments permits an estimation of total production in the South at about 530 million Imperial gallons (635 million American gallons), which is much above the figures attained in 1932 and 1931 (427.8 million Imperial gallons; 511.5 million American gallons and 424.6 million Imperial gallons; 509.8 million American gallons) and only a little below the average of 1927-31 (556.5 million Imperial gallons; 663.3 million American gallons).

In many other regions, on the contrary, the vintage results were generally below the forecasts, with the result that it is necessary to retain the preliminary estimate given last month of a total production about equal to that of last year and rather below 1,100 million Imperial gallons (1,300 million American gallons).

Private estimates vary in fact, from 1,010 million Imperial gallons (1,220 million American gallons) to 1,100 million (1,300 million) for the total of the quantities declared, which is normally about 40 million (50 million) below the total production.

Stocks remaining in producers' hands do not appear to be very high; the General Confederation of Viticulturalists estimates that they should not be much larger than those held at the beginning of the season 1932-33 (94.6 million Imperial gallons; 113.6 million American gallons).

The results known for the past commercial season are as follows. Of the 1.143 million Imperial gallons (1.373 million American gallons) declared by producers in France at the beginning of the season, 686.3 million (824.2 million) have been sold to the trade; this quantity, which is about equal to the total sales of 1930-31, is, with the latter, the lowest recorded during the last ten years.

Algeria has furnished France with 345.4 million Imperial gallons (412.1 million American gallons) or 96.8 million (116.2 million) more than during last season; Tunis, 15.4 million (18.5 million) against 6.6 million (7.9 million) and foreign countries 48.4 million (58.1 million) against 21.9 million (26.4 million). The total imports of wine into France were therefore 408.2 million (491.4 million) whereas they amounted to 279.4 million (325.5 million) in 1931-32 and 290.4 million (248.7 million) on the average for the previous five seasons.

If account is taken of the variations in trade stocks, which are slightly larger at the end of the season than at the beginning, it is found that sales to the trade of the French Algerian crop amounted to 1,088.9 million Imperial gallons (1,305.4 million American gallons), whereas the corresponding quantity in the preceding season was 1,144 million (1,374 million) and 1,066.1 million (1,244.2 million) on the average for the period 1926-27 to 1930-31. Taxed trade consumption of wine has, in fact, decreased by 22.0 million (26.4 million) compared with last season but remains 30.8 million (37.0 million) above the average of the preceding five seasons; production of alcohol has decreased by over one half and exports have further diminished by 13 % compared with last season.

Summarising, sales of wine to the trade decreased during the last season; owing to the fact, moreover, that Algeria and foreign countries have made a particularly large contribution, a relatively large part of the home production, though the latter was small, has been re-absorbed by untaxed family consumption giving no profit. The cause of this difficulty of marketing the French production was principally the mediocre quality, which was very inferior to that of Algerian wines and also the fairly high prices, which exceeded those of the other producing countries.

The prospects for the trade season 1933-34 are much more favourable owing to the lower volume of French-Algerian supplies and the good quality of the French wines, principally consumed. It is probable that foreign imports from Spain, Italy and Greece will be larger but the proportion of French supplies which will be sold to the trade will also be larger and it may also be forecast that trade stocks will be smaller at the end of the season.

In fact, sales by producers during the first month of the season were more than 22 million Imperial gallons (26.5 million American gallons) larger than in October 1932 and taxed consumption has also increased. Quotations have continued to rise and at mid-November were very firm but greatly below those of October-November 1932 and little above those of November 1931, so that they do not check business. The trade season 1933-34 consequently promises to be normal, in contrast to the previous one, especially as there will probably be no final segregation.

*Italy:* The completion of the vintage was delayed in several regions by the bad weather which prevailed during the first half of November, but, on the whole, no appreciable damage was caused.

The information collected since 15 October generally confirms the results given last month regarding small quantity and good quality. In Apulia particularly yields have turned out to be very irregular; they exceed those of last year by 30-50 % and even by 100 %, in some vineyards, are normal in others and smaller, on the contrary, in large areas by 15-30 % compared with 1932. In Tuscany, where the vintage had to be prolonged until 10 November, quantity and quality are only

average. On the whole there is no change to be made in the preliminary estimate made last month of a crop about 25 % smaller than that of last year and approximately reaching 800 million Imperial gallons (1,000 million American gallons); a private estimate indicates a deficit of 30 % but this seems rather excessive.

Producers have re-fermented the wines of the previous crop in the areas where they were abundant in order to correct their mediocre quality for sale on the market.

Trade activity, which was fairly active in October, has slackened with the completion of the vintage. Consumption remains normal; exports, particularly to Switzerland, are regular; the growth of shipments to France is anticipated in view of the prorogation of the French-Italian *modus vivendi* for wines; the prohibition of imports in the United States has on the contrary, checked trade with this country. Quotations are firm owing to the resistance of producers.

The latest official data forecast a production smaller than that previously in general anticipated; although not reaching the 30 % indicated above, the decrease compared with the production of last year should be from 220 million Imperial gallons (260 million American gallons) to 260 million (320 million), or 22-26 % and wine production this year should therefore be comprised within the limits 750 million (900 million) and 790 million (950 million). It should be noted that production and consumption of fresh table grapes has this year greatly increased.

*Switzerland*: Quality is poor. Frosts in April and rain in May and June very appreciably reduced yields. According to the Swiss Tree-fruit and Vine Association, this year's crop in German Switzerland is as follows in Imperial (and American) gallons:

	Acres		Red wine	White wine	Average gals. per acre
1933 . . . .	4,665	Imperial gallons. .	377,412	282,801	146.0
		American gallons. .	453,238	339,618	175.3
1932 . . . .	4,685	Imperial gallons. .	591,624	919,410	324.0
		American gallons. .	710,487	1,104,128	389.1

In Romance Switzerland, where quantity promises to be everywhere very good, quality is also poor; Canton Vaud reckons on a production of 1,540,000 (1,849,000) gallons against 2,750,000 (3,302,000) in 1932. In Valais a crop of 1,540,000 (1,849,000) to 1,760,000 (2,113,000) gallons is expected. about as much as last year. In Canton Geneva it is calculated at 220,000 (264,000) against 220,000 (264,000) to 330,000 (396,000) gallons in 1932. In Canton Neuchâtel yield of about 440 (528) to 660 (793) gallons per acre. The total production of the four Romance viticultural cantons is estimated at only 3,850,000 (4,623,000) against 6,599,000 (7,925,000) gallons last year.

*Yugoslavia*: At the beginning of November, the vintage, delayed by unfavourable weather, had been nearly finished. The information published in our last Crop Report is confirmed of a poor vintage yield this year, which is estimated to be about 30 % below that of the preceding year. Despite this pessimistic forecast, no tendency to improvement of wine prices is noted owing to the influence of old stocks and the reserve of foreign and Yugoslavian buyers.

*United States*: Production of grapes is estimated at 36,000,000 centals against 44,075,000 in 1932 and 45,667,000 on the average for 1927-1931; percentages: 81.7 and 78.8.

*Palestine* : The total yield of wine is only about 20,000 hectolitres (440,000 Imperial gallons and 528,000 American gallons), a quantity below the average of recent years.

*Syria and Lebanon* : The cold, dry spring winds and the persistent drought have considerably reduced the production of grapes. The damage may be estimated at 20-25 %. In Lebanon the appearance of phylloxera is reported in the Bekaa region.

*French Morocco* : The vintage was completely finished at the end of October. Yields were decidedly affected by the drought and strong winds in preceding months but alcohol degree of the wines is in general fairly high.

*Tunis* : Owing to the persistent drought, tillage of the vineyards was checked nearly everywhere. The vines had still not lost their leaves in the North at the end of October and the shoots lignified slowly.

The fermentation of wines was often rendered difficult by abnormal seasonal conditions but quality is generally good.

## OLIVES

*France* : Prospects for olive production are poor.

*Italy* : Attacks of olive fly are again reported almost everywhere. Olive production is forecast to be below the average. Planting of new trees, encouraged by the government, has been largely practiced and it is anticipated that over 700,000 trees will be planted and that 500,000 old trees will be pruned.

*Yugoslavia* : Favourable weather in September led to expectations of an abundant crop this year. The prolonged drought in September favoured spread of *phloeotrips oleae* and caused shedding. Still greater damage was caused by *Dacus oleae*, of which the appearance had been reported in October. Despite these adversities crop condition promises an average production, perhaps a little below that of last year which was not very abundant either.

*Palestine* : Picking of olives has started all over the country. The crops are very poor and are estimated at 15 to 40 per cent. of normal.

*Syria and Lebanon* : The dry, cold spring winds and the persistent drought have seriously compromised the production of olives.

*Turkey* : According to the latest information, the forecast of production of olives for the season 1933-34 at Ödemiş, the important region of the province of Izmir, is estimated at 88,200,000 lb. Production of olive oil is estimated at 15,400 centals (203,000 American gallons). In the preceding season the corresponding figures were 110,231,000 lb. and 22,000 centals (290,000 American gallons).

*Algeria* : At the end of October harvesting of olives for preserving was in progress; that of olives for oil began at the middle of the month in Oran and became general in the Centre and East but was fairly slow owing to the fact that growers hoped for the rain which was necessary to complete the ripening of olives, growth of which had been

checked by heat and drought. There was consequently large dropping of fruit and further damage was caused by olive fly. It is therefore probable that the estimate of oil production published last month (350,000-365,000 centals; 4,635,000 - 4,780,000 American gallons) will subsequently be somewhat reduced.

Local trade began to revive but quotations, which are still unstable, remain low. Industrialists are making efforts to improve methods of purchase and transport in order to obtain oil of better quality capable of benefiting from the guarantee of the Algerian trademark and the Government premium, but it does not seem probable that similar efforts will be made by olive growers and native sellers.

*Tunis* : Olive production has suffered from attacks of *dacus* and drought, the latter having caused fairly considerable dropping of fruit in some localities. The situation is mediocre however, only in the region of Kef, the production of which is insignificant ; in all other areas, it is average or good. In the Sousse region particularly, which comprises nearly one half of the trees in bearing, growth was good at the end of October and crop forecasts were average ; ripening should take place at the end of November and particularly in December. In the South (regions of Sfax, Gabès and Tozeur), the production of which is also large, damage by *dacus* and drought seemed to within narrow limits ; the trees are in perfect condition and carry a good crop ; the olives are ripening slowly and are not very large but appear to have a satisfactory oil content ; rain at the end of October favoured the ripening and filling out of the fruit.

On 1 November crop condition remained however, on the whole, good everywhere (120) the same as since the beginning of the summer and as last year. The preliminary estimate of production has been slightly raised to 1,433,000 Imperial gallons (18,831,000 American gallons) with the result that production in 1933-34 should be about 8 % larger than the preceding one and 83 % above the five year average 1927-28 to 1931-32.

## COTTON

The November report published by the U. S. Government, giving the fourth estimate of production, anticipates a production of 13,100,000 bales of ginned cotton. This figure shows an increase of 215,000 bales on the October forecast, or 1.7 % and 786,000 bales or 6.4 % on the first estimate made in August. During October 10 States increased their estimates of production to the extent of 347,000 bales, of which 160,000 bales was contributed by Texas and 75,000 bales by Oklahoma. The other States together record a total decrease of 215,000 bales. Compared with last year's final estimate, the November figure shows an increase of 0.8 %, whereas, compared with the average of 1927-31 it is 10.6 % smaller. The average yield forecast in the November report is 208.7 lb. of lint per acre against 205.3 in the preceding month and 173.3, the final figure for last year. Harvesting has been completed and the results indicate that picking has been very carefully effected under very favourable conditions. Ginning made considerable progress in October. The average weight of running bales this year is greatly above average as a result of the high yields.

The estimate issued by the Government is this time below the average of private estimates but quotations have not reacted, having been influenced by

the fall in the dollar and the very wide fluctuations in the dollar-sterling exchange. Consumption is maintained at a satisfactory level and exports also continue to exceed those of last year. The Government plan to reduce sowings in 1934 to an area not exceeding 25 million acres promises to be a complete success.

The Indian crop, on the whole, made satisfactory progress during last month, also contributing to slightly depress quotations. The negotiations between India and Japan are continuing and it is presumed that the latter will shortly remove its boycott of Indian cotton, a recovery in Japanese demand having recently occurred on this market.

### Cotton.

COUNTRIES	AREA						PRODUCTION OF GINNED COTTON									
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		1933/34	1932/33	Average 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34				
				1932/ 1933	Average age = 100							1932/ 1933	Average age = 100			
1,000 acres			1,000 centals			1,000 bales of 478 lb.										
Bulgaria . .	49	20	13	250.8	369.9	86	40	18	18	8	4	213.5	478.5			
Spain . . .	19	20	23	91.8	80.9	44	23	21	9	5	4	187.9	213.1			
*Greece . .	1) 93	50	44	186.2	212.2	...	105	69	...	22	15	...	...			
Italy. . . .	4	4	8	100.2	47.1	5	5	15	1	1	3	99.8	36.8			
U.S.S.R. . .	2) 4,977	5,139	3,249	96.8	153.2	3) 9,389	8,497	6,577	3) 1,964	1,778	1,376	110.5	142.8			
United States	30,036	35,939	40,996	83.6	73.3	62,618	62,147	70,061	13,100	13,002	14,657	100.8	89.4			
Mexico . .	421	188	406	224.5	103.8	1,068	453	1,043	223	95	218	235.6	102.4			
China . . .	4) 6,025	5,633	4,937	107.0	122.0	4) 13,112	10,803	10,224	4) 2,743	2,260	2,139	121.4	128.2			
Korea . . .	429	393	481	109.2	89.2	701	606	643	147	127	134	115.6	109.1			
*India 4) . .	19,641	18,415	20,655	106.7	95.1	—	—	—	—	—	—	—	—			
*Syria & Leb.	19	20	50	96.4	38.5	...	19	55	...	4	12	...	...			
*Fr.Eq. Africa	...	124	30	...	...	93	60	16	19	12	3	155.6	587.4			
Egypt . . .	1,873	1,133	1,840	165.0	101.8	3) 7,846	4,909	7,393	3) 1,641	1,027	1,547	159.8	106.1			
*Eritrea . .	12	5	6	250.0	195.3	...	7	6	...	2	1	...	...			
*Uganda . .	1,034	1,071	700	96.5	147.7	...	1,060	694	...	243	145	...	...			
TOTALS . .	43,833	48,471	51,953	90.4	84.4	94,869	87,483	95,995	19,846	18,303	20,082	108.4	98.8			

\* Countries not included in the totals. — 1) Unofficial estimate. — 2) Area cultivated up to 10 June. — 3) First estimate. — 4) Second estimate.

In Egypt, picking has everywhere been finished and private estimates agree on a production of 1,800,000 to 1,850,000 bales. The largest production previously obtained was that of 1929, calculated at 1,768,000 bales, with a yield per acre of 446 lb. The second official estimate will be issued on Monday, 4 December.

The Egyptian Government has communicated its decision not to restrict the area under the cotton crop during the coming year for the season 1934-35.

No information has been issued regarding *Sakellariadis* but it is understood that the decree of February 1931 prohibiting the production of this variety outside certain areas in the north of the Delta (see Crop Report, April 1931) remains



in force. It seems, moreover, probable that the cotton area in the coming year may not considerably exceed that of this year, owing both to the level of current prices and to the Egyptian system of triennial rotation. Economic conditions on the farm, moreover, give rise to the forecast that it will not, in general, be possible to grow cotton on lands presently fallow. The Egyptian market remains active. A recovery is noted in exports of *Sakellaridis*. The margin between the quotations for "American" and "Uppers" still favours the latter. Arrivals and exports continue to exceed the corresponding quantities of the last two years.

The second estimate of Chinese production is 8.4 % below the first, but 21.4 % above last year's production. It is forecast, however, that the final estimate will be still lower.

I. S.

\* \* \*

*U. S. S. R.* : On 25 October last purchases of cotton by the Government represented 56.2 % of the annual plan.

*United-States* : In the week ended on November 1, the weather was favourable and good advance was made in the final gathering of the cotton crop with few interruptions by showers. The crop had been mostly picked, comparatively little remaining in the fields. In the first week of November the picking of the remnants of the cotton crop was favoured in most places, except that rain caused considerable interference in the North-western belt, especially in Oklahoma and Arkansas.

The quantity of cotton, not including linters ginned from the 1933 crop to the close of business on 17 October was 8,606,000 running bales (counting round bales as half bales), against 7,309,000 in 1932, 9,497,000 in 1931, 9,255,000 in 1930, 9,095,000 in 1929 and 8,151,000 in 1928; to the close of business on 31 October: 10,361,000, against 9,247,000 in 1932, 12,124,000 in 1931, 10,864,000 in 1930, 10,892,000 in 1929 and 10,162,000 in 1928.

*St. Vincent (Br. West Indies)* : The area under Sea Island cotton for the 1933-1934 season is estimated at about 1,000 acres, as against 669 in 1932-33 (147.6 %) and 3,074, the average for the preceding quinquennium (32.2 %).

*China* : According to the second estimate of the Chinese cotton crop for 1933, published by the Chinese Cotton Statistics Association of Shanghai, the area under cultivation this year was 6,112,000 acres, which is the highest figure recorded during the last 20 years. The abandoned area amounts to 87,300 acres, or 1.4 % of the cultivated area. The area to be harvested is now estimated at 6,025,000 acres, an increase of 80,000 acres on the first estimate. This is explained by the fact that fields where sowing had not been finished while the first investigation was being carried on, were excluded from the first estimate. Production of ginned cotton is forecast at 2,743,000 bales of 478 lb. net weight, with an average yield of 217.7 lb. of lint per acre, as against 2,993,000 bales and 238.8 lb. per acre of the first estimate, a reduction of 8.4 %. The above figures are based on reports received from the eleven provinces of Hopei, Shantung, Szechuan, Honan, Shensi, Hupeh, Hunan, Kiangsi, Anhui, Kiangsu and Chekiang, and the two municipalities of Shanghai and Tientsin. The figures represent conditions prevailing up to 25 September, with allowances made for damage done to the crop prior to that date.

When the first estimate was made there were prospects of a good cotton crop. The reduction of the second estimate is due to several causes. In Shantung a good crop was destroyed by excessive rainfall in several districts and by the recent Yellow River floods in the Tsao district; in Honan a serious drought in and after August ruined what promised to be a bountiful harvest; in Shensi a large area was inundated by the Han River, the damage done being enormous, while in Kiangsu and Chekiang (especially the latter) promising crops were affected first by the dry spell in July and then by two typhoons in September. Moreover, many cultivated areas in the provinces of Shantung, Shansi, Kiangsi and Kiangsu were abandoned. Small increases in the output are reported only in the provinces of Anhui, Hupeh and Hopei.

*India*: According to a telegram received on 13 November from the Punjab Government picking in that province was still in progress and crop condition was 87 % of normal. Previous reports indicated that American cotton had been somewhat damaged by bollworm in the Shahpur district. Weather had been dry save for some light rain in the Southwest.

Picking was also reported up to the beginning of November in the United Provinces, the Central Provinces and Sind to be proceeding. In these areas as a whole there had been no rain save light showers and the weather had been clear and cool. Slight damage was reported in the Jubbulpore, Nimar, Wardha, Nagpur and Buldana districts of the Central Provinces.

*Egypt*: During the second half of October weather conditions were favourable to maturation and opening of the late but healthy bolls. Picking continued in the remaining late-sown areas and by the end of October no more cotton was in the fields except in the Sakellaridis regions, where picking had been almost completed during the first half of November. Yields per acre and ginning yields are higher than the corresponding yields of last year for all varieties, except Sakellaridis.

*Cotton ginned up to the end of October, in bales of 478 lb. net weight*

Varieties	1933	1932	1931	1930	1929
Sakellaridis . . . . .	30,870	42,920	45,630	71,050	109,770
Other varieties above:					
I 3/8" . . . . .	40,060	29,430	339,710	386,140	443,690
I 1/4" . . . . .	17,620	22,310			
I 1/8" . . . . .	418,860	203,700			
<i>Total</i> . . . . .	507,410	298,360	385,340	457,190	553,460
Scarto (linters) . . . . .	7,470	6,050	8,680	8,690	10,500

*Uganda*: Weather conditions during September were favourable in many areas and prospects on the whole are satisfactory. Black arm has been reported from Lango and Teso district but pests and diseases have not yet caused serious damage.

## FLAX

*Estonia*: Thanks to the favourable weather, quality of seed and fibre is above that of last year.

*Great Britain and Northern Ireland*: It is anticipated that the yield of flax in Northern Ireland this season will be of at least average dimensions and the quality also will be satisfactory.

## Flax.

COUNTRIES	†) AREA					†) PRODUCTION							
	1933	1932	Aver. 1927 to 1931	% 1933 — 1933/34		1933	1932	Aver. 1927 to 1931		1933	1932	Aver. 1927 to 1931	% 1933 — 1933/34
	—	—	—	—		—	—	—		—	—	—	—
	1933/34	1932/33	1927/28 to 1931/32	1932 — 1933/1933	Aver. — age = 100	1933/ 1934	1932/ 1933	1927/28 to 1931/32		1933/34	1932/33	1927/28 to 1931/32	1932 — 1933/1933
	1,000 acres					1,000 centals				1,000 pounds			
													Aver. = 100

## Fibre.

Germany . . . . .	12	11	30	108.1	40.2	—	—	—	—	—	—	—	—
Austria §) . . . . .	4	8	10	53.9	42.2	63	106	138	6,305	10,582	13,814	59.2	45.6
Belgium . . . . .	27	21	54	128.7	49.3	191	151	439	19,113	15,078	43,874	126.8	43.6
Bulgaria . . . . .	1	1	1	99.0	111.7	2	2	2	198	163	191	121.6	104.0
Estonia . . . . .	41	36	75	113.3	54.6	109	84	194	10,876	8,449	19,352	128.7	56.2
Finland 1) . . . . .	10	10	10	102.3	97.1	...	33	28	...	3,282	2,769	...	...
France . . . . .	28	23	71	124.0	39.7	...	121	518	...	12,100	51,840	...	...
N. Ireland . . . . .	10	6	27	160.6	36.7	...	26	110	...	2,565	10,976	...	...
Hungary . . . . .	19	16	22	120.7	87.0	...	51	85	...	5,136	8,532	...	...
Latvia . . . . .	103	78	139	130.9	73.8	283	208	385	28,263	20,812	38,524	135.8	73.4
Lithuania . . . . .	135	106 1)	200	128.1	—	3,97	314	671	39,656	31,442	67,135	126.1	59.1
Netherlands . . . . .	12	5	33	235.7	34.9	75	31	225	7,496	3,086	22,503	242.9	33.3
Poland . . . . .	237	231	279	102.3	84.7	...	564	1,127	...	56,431	112,745	...	...
Rumania . . . . .	45	54	50	84.1	90.4	...	123	74	...	12,322	7,402	...	...
Czechoslovakia . . . . .	18	16	40	109.8	44.4	83	72	175	8,271	7,243	17,482	114.2	47.3
U. S. S. R. 3) . . . . .	5,288	6,202	4,006	85.3	132.0	...	12,125	8,448	...	1,212,546	844,797	...	...
Egypt . . . . .	3	2	3	148.1	124.3	25	15	18	2,494	1,501	1,822	166.1	136.9
TOTALS . . . . .	5,993	6,826	5,050	87.8	118.8	—	—	—	—	—	—	—	—

## Linseed.

Austria . . . . .	3	5	6	54.2	40.9	9	20	23	17	36	41	45.7	40.1
Belgium . . . . .	27	21	54	128.7	49.3	143	113	263	256	202	470	126.5	54.5
Bulgaria . . . . .	1	1	1	99.0	117.7	6	6	4	11	11	7	100.7	165.2
Estonia . . . . .	41	36	75	113.3	54.6	136	86	198	243	153	354	159.0	68.8
Italy 4) . . . . .	20	22	32	90.2	61.1	...	54	54	...	96	96	...	...
Latvia . . . . .	103	78	139	130.9	73.8	247	197	359	441	352	640	125.4	68.9
Lithuania . . . . .	135	106 1)	200	128.1	—	464	350	745	829	626	1,331	132.6	62.3
Poland . . . . .	237	231	279	102.3	84.7	...	919	1,417	...	1,641	2,531	...	...
Rumania . . . . .	45	54	50	84.1	90.4	220	209	188	394	374	335	105.3	117.5
Czechoslovakia . . . . .	18	16	40	109.8	44.4	60	53	140	107	95	250	112.7	42.8
U. S. S. R. . . . .	5) 6,348	7,784	5,238	—	—	...	...	14,046	...	...	25,081	...	...
Canada . . . . .	244	454	489	53.8	49.9	380	1,370	2,026	679	2,446	3,619	27.8	18.8
United States . . . . .	1,755	2,081	2,915	84.3	60.2	4,200	6,601	10,452	7,500	11,787	18,664	63.6	40.2
India . . . . .	3,239	3,301	3,123	98.1	103.7	9,027	9,318	8,221	16,120	16,640	14,680	96.9	109.8
Egypt . . . . .	3	2	3	148.1	124.3	27	16	20	49	28	35	174.6	140.2
Eritrea . . . . .	4	2	—	150.0	—	20	17	—	35	30	—	119.2	—
Argentina . . . . .	7) 7,166	7) 7,401	7) 7,448	96.8	96.2	...	29,291	42,388	...	52,305	75,694	...	...
Uruguay . . . . .	266	337	324	79.0	82.2	...	827	1,915	...	1,476	3,419	...	...
TOTALS . . . . .	5,618	6,157	7,095	91.1	79.1	14,939	18,356	22,639	26,681	32,780	40,426	81.4	66.0

†) The two dates mentioned refer to the years in which the harvest took place in the Northern and Southern hemispheres respectively. — \* Countries not included in the totals. — §) Production expressed in terms of air-dried stalks. — 1) Flax and hemp. — 2) Area sown to 1 June. — 3) "Dolgunetz". — 4) Beginning from 1931 the figures have been calculated taking into account the results of the new agricultural survey. — 5) Area sown up to 16 June; that of the plan is 7,082,000 acres. — 6) Average 1927-30. — 7) Area sown.

## HEMP

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres						1,000 pounds				
<i>Fibre.</i>										
Germany 1) . . .	1	1	1	65.9	35.3	—	—	—	—	—
Austria 2) . . .	1	1	1	91.4	86.5	1,521	1,631	1,765	93.2	86.2
Bulgaria . . . .	12	11	9	111.0	130.5	5,049	3,906	3,034	129.3	164.4
France . . . . .	6	6	11	108.9	59.0	...	5,311	10,057	...	...
Hungary 3) . . .	21	17	20	127.2	104.9	...	10,965	13,084	...	...
Italy 4) . . . .	146	134	203	109.5	72.0	...	122,441	177,868	...	...
Poland . . . . .	79	79	77	100.6	103.3	...	22,274	42,372	...	...
Rumania . . . .	115	103	97	111.2	118.5	...	57,137	42,628	...	...
Czechoslovakia .	19	19	23	98.8	83.1	11,695	13,134	12,623	89.0	92.6
—										
U.S.S.R. . . . .	5) 1,344	2,333	2,175	—	—	...	...	6) 708,089	...	...
—										
Syria and Lebanon	2	7	6	35.6	37.0	...	3,108	3,996	...	...

*Hempseed.*

Austria . . . . .	7) 12	7) 11	7) 9	75.0	47.6	110	154	210	71.4	52.5
Bulgaria . . . .	12	11	9	111.0	130.5	3,968	4,272	2,348	92.9	169.0
Hungary 3) . . .	21	17	20	127.2	104.9	...	7,253	7,726	...	...
Poland . . . . .	79	79	77	100.6	103.3	...	31,264	46,640	...	...
Rumania . . . .	115	103	97	111.2	118.5	44,093	42,606	23,614	103.5	186.7
Czechoslovakia .	19	19	23	98.8	83.1	7,526	8,357	9,268	90.1	81.2
U.S.S.R. . . . .	5) 1,344	2,333	2,175	—	—	...	...	6) 1,020,148	...	...
Syria and Lebanon	2	7	6	35.6	37.0	...	1,190	1,089	...	...

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Unmixed crops. — 4) The figures beginning from 1931 have been calculated taking into account the results of the new agricultural survey. — 5) Area sown up to 10 June; that of the plan is 2,217,000 acres. — 6) Average 1927-30. — 7) Area inferior to 500 acres

## HOPS

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
Germany . . . . .	24	20	32	119.4	74.4	14,977	10,929	1) 23,864	137.0	62.8
Belgium . . . . .	2	1	3	116.4	54.4	1,765	1,531	3,816	115.2	46.2
Engl. and Wales . .	17	17	22	102.2	76.6	24,192	21,056	28,627	114.9	84.5
*Hungary . . . . .	2) 9	5	1	148.0	66.5	...	141	265	...	...
*Poland . . . . .	9	5	3) 7	202.7	144.3	...	3,436	3,812	...	...
Czechoslovakia . .	27	24	38	113.5	69.8	12,914	16,583	26,083	77.9	49.5
United States . . .	27	22	23	122.9	116.4	37,724	24,120	29,331	156.4	128.6
TOTALS . . . .	97	84	118	114.3	83.3	91,572	74,219	111,721	123.4	82.2

\*) Countries not included in the totals. — 1) Average 1929 to 1931. — 2) Area inferior to 500 acres. — 3) Average 1927 to 1929.

## TOBACCO

*Yugoslavia* : The crop in Southern Serbia, the principal producing area, is very poor. According to official data it will not exceed 88,000 centals, 40 % below that of last year. This severe reduction is to be attributed to the decision of the Monopoly Administration to reduce the crop by 50 % from that of 1932, stocks being large and to the very low unit yield due to unfavourable weather.

*Cyprus* : Tobacco production is expected to be moderate.

*Tobacco.*

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
*Germany 1). . . .	30	27	26	110.6	115.5	...	62,224	2) 51,105	...	...
Belgium . . . . .	7	7	7	101.4	90.7	13,726	13,688	15,290	100.3	89.8
Bulgaria . . . . .	57	47	75	120.4	76.2	38,581	31,213	56,724	123.6	68.0
Spain . . . . .	12	10	7	120.7	165.8	14,330	16,605	10,074	86.3	142.2
Greece . . . . .	3) 190	157	231	121.0	82.0	3) 80,084	64,498	132,179	124.2	60.6
*Hungary . . . . .	44	61	58	72.1	75.7	...	87,074	69,732	...	...
Czechoslovakia . .	25	25	17	100.4	146.8	30,479	37,623	20,922	81.0	145.7
United States . .	1,740	1,422	1,907	122.4	91.2	1,408,000	1,015,512	1,474,666	138.6	95.5
Japan . . . . .	84	84	90	100.2	92.8	139,200	138,230	145,584	100.7	95.6
*Syria and Lebanon	8	11	10	74.7	81.2	...	5,669	6,397	...	...
Algeria . . . . .	49	59	61	83.2	81.1	33,069	40,663	48,363	81.3	68.4
TOTALS . . . . .	2,164	1,811	2,395	119.7	90.2	1,757,469	1,358,032	1,903,802	129.4	92.3

\* Countries not included in the totals. — 1) Production for sale. — 2) Year 1931. — 3) Unofficial estimate.

## OTHER PRODUCTS

## Cacao.

*Brazil* : Exceptionally heavy rains fell on 21 October and succeeding days, causing traffic on the railway to be partially suspended for ten days and interfering with the collection of cacao. All rivers and streams were in flood. The entries by rail were accordingly much smaller than those during October 1932.

	October 1933	May-October 1933	October 1932	May-October 1932
Entries by rail (1000 lb.) :				
Ilheus zone . . . . .	9,140	47,151	14,121	61,093
Rio de Contas zone . . .	780	6,124	1,753	8,367

Prospects for the crop were reported to be satisfactory. Rainfall at Ilheus was 533 mm. (21 inches) against the average of 115 mm. (4.53 inches).

*Trinidad* : Flowering and fruiting has suffered from the heavy rains of the wet season now coming to an end. Harvesting was begun in October but only a small amount was picked.

*Gold Coast and British Togoland*: **MAJOR CROP.** — With the exception of Koforidua and Kibi all districts reported in mid- October that the 1933-34 crop was less than that of last year and late. The cessation of flowering and pod-setting indicated a normal end to the season. In Ashanti about 40 % of the crop was ripe but little had been harvested, the weather having been unfavourable. In the Central Province the crop was less advanced but picking was more general as more favourable weather prevailed. In the Eastern Province about 30 % of the crop was ripe in all districts except Nsawam, which is later; weather had been favourable and picking was general, more having been marketed than in the other provinces.

**CROP MOVEMENT.** — Exports in 1932-33 were 561 million pounds against 463 million in 1931-32. To the total must be added 12 million pounds exported over the Eastern frontier into French Togoland and included in the maritime exports of that country. The total of 573 million pounds is the highest recorded. Adjusting the figures to take into account the carryover from the previous season, the production figures for the total 1932-33 crop are as follows (in millions of pounds) :

	Major crop 1932-33	Minor crop 1933	Total crop 1932-33
Gold Coast . . . . .	515	35	550
British Togoland . . . . .	21	2	23
	<hr/>	<hr/>	<hr/>
Total . . . . .	536	37	573
	<hr/>	<hr/>	<hr/>

The average purity for the twelve-month period ending September 1933 was 88.4 % while the average for the eight months October 1932 to May 1933, which cover roughly the main crop, was 90.1 %, showing an improvement on the previous two main crops, which both gave average purities of 89.1 %. The highest monthly average was 93.0 % in November 1932. Taken by consignments, 60 % of the cacao shipped during the main season was over 90 % and 86 % was over 85 %, figures almost the same as in the previous season. During the first half of October quality of the cacao shipped has varied but an improvement was shown in the second week of the new main crop shipments, some consignments of over 93.0 % purity having been shipped from Accra. There is no indication, however, that any considerable quantities of high purity cacao are yet available.

## Tea.

*U. S. S. R.* : The area of tea plantations in the current year is 84,000 acres against 70,700 in 1932 and 4,600 on the average for 1928-1931. Percentages: 118.9 and 1,838.

*India* : In the north weather at the beginning of September was on the whole hot and dry but toward the end of the month became more seasonable. Prospects were fair. Up to the end of September there was a decrease of 36  $\frac{1}{4}$  million pounds in production as compared with that up to the same date last year.

In the south the weather in the first half of September was generally unfavourable but in the latter half conditions were more promising and prospects brighter. Outturn was 9.39 % behind that to the same date last year.

*Persia* : According to the latest information, tea harvesting has been finished giving more than satisfactory results in Guilan, the principal region for this crop.

## Coffee.

*Kenya* : Area and production of coffee, according to the September estimate, are as follows : Area 103,000 acres as against 100,000 in 1932-33 and 93,000, the average for the preceding quinquennium. Percentages : 102.8 and 110.7. Production 259,000, 356,000, 241,000 centals respectively. Percentages : 72.7 and 107.6. The reduction of 18,000 centals as compared with the previous estimate is in part consequent upon an increase in the number of crop correspondents, though partly also due to reduction of former correspondent's estimates, particularly in North Nyeri and Nandi. A very substantial amount of coffee is of low quality and may not be worth shipping to the London Market. In September dry conditions again prevailed in the main areas and trees were suffering severely, Picking was continuing.

## Colza and Sesame.

*Austria* : On November 1, crop condition of winter colza was 2.4 against 2.3 on November 1, 1932. Crops were not well developed owing to the generally cold weather.

*Rumania* : The area sown to winter colza up to 1 November was 29,900 acres against 10,100 and 30,100 at the same date of 1932 and 1931 respectively.

*India* : (Telegram of 3 November) : The second forecast of area under sesame in 1933-34 is 4,305,000 acres, an increase of 11.2 % on the corresponding forecast of 1932-33 (3,871,000 acres) and of 23.2 % on the corresponding average for the five years ending 1931-32 (3,494,000 acres).

*Japan* : Production of colza this year is estimated at about 1,939,000 centals (3,878,000 short tons) showing an increase of 3 % on the production of 1932 and of 18 % on the average of the preceding quinquennium.

## Jute.

*India* : Steeping and washing were still in progress at the end of October.

## Groundnuts.

*Egypt* : Harvesting of groundnuts started during the latter half of October and was later than usual owing to attack by cotton-worm during the vegetative growth and flowering. The yield per acre will be 9 % below the average. Crop condition : 91 on 1 November, against 99 on 1 October 1933 and 100 on 1 November 1932.

## SERICULTURE

The weather conditions have on the whole been favourable for the rearing of silk worms in western Europe, but much less good, on the contrary in the countries of eastern Europe, in which the cold and too abundant rain have damaged mulberry leaves and checked rearing. In the countries of the Far East, the weather conditions have, on the contrary, been favourable both to the mulberry trees and to the spring and autumn rearing; the mulberry trees flowered badly at the beginning of the spring only in some areas of Japan.

The difficulties encountered by producers were also very severe this year and the different Governments have been obliged to intervene with new subsidies and assistance and also by the renewal of facilities already granted in previous years; some countries have accordingly favoured the planting of new mulberry trees and have taken steps to protect and encourage their cultivation; in some others, the premium granted per unit of cocoons produced has been renewed and measures have been introduced to encourage the erection of cooperative drying plants; lastly, in others, the banks have checked congestion of the market at the time of marketing of the new production.

The situation in the different countries may be summarized as follows.

In Italy, the beginning of the season favoured the mulberry trees, which promised an abundant foliage; the weather conditions subsequently became unfavourable owing to the rains and low temperatures; some rather unimportant cases of disease are reported. Production of leaves is smaller than last year and still smaller than the average. The figure of production of fresh cocoons is not yet known, owing to the fact that the establishment of a statistical estimate has been rendered more difficult by the Government premium of one lira per kilogram of cocoons produced and the result will consequently not be known until later; in any case however, production in 1933 is apparently below the average.

In Greece, the crop condition of mulberry trees has apparently not been very satisfactory and yields have been rather low in some areas. Rearing has, however, taken place under favourable conditions and it is estimated that the production of cocoons has not been smaller than that of 1932, which was about 4 millions lbs. and consequently decidedly below the average of a period of years preceding 1930.

In Bulgaria, the weather conditions were unfavourable for the rearing of silk worms after the beginning of the season and abundant rains and low temperatures checked operation and rendered difficult the regular feeding of the silk worms, which also suffered from various diseases. These conditions had their repercussion on yields, which were considerably below those of 1932; in fact, whereas the quantity of eggs incubated was 6.3 % larger than that of last year, the production of cocoons remained slightly lower; the current production represents only about 67 % of the average obtained in 1927-31.

Production of cocoons was also very poor this year in France; the preliminary official estimate indicates, for 1933, a production below that of the preced-



ing two years, which varied from 1,980,000 lb. to 2,000,000 lb. against for example 9.7 million lb. obtained in 1913. The number of producers decreased in 1933 by 13 %. On the other hand, the data published show that yields this year have been better than all those of preceding seasons as a result partly of the very favourable weather which has permitted a good crop of leaves and satisfactory growth of the rearings and at the same time checked the diffusion of disease.

### Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver. age				1932	Aver- age
1,000 ounces			1,000 pounds							
Bulgaria . . . . .	27	25	40	106.3	68.2	2,866	2,876	4,303	99.7	66.6
*Spain . . . . .	...	13	24	...	...	1,014	1,199	1,727	84.6	58.7
France . . . . .	16	18	45	90.9	36.7	2,076	2,176	5,161	95.4	40.2
*Italy . . . . .	...	608	919	...	...	...	84,318	107,468	...	...
Korea . . . . . { s)	220	227	203	96.9	108.1	30,016	29,272	24,778	102.5	121.1
Japan . . . . . { t)	133	115	110	115.8	133.4	15,511	11,685	9,038	132.8	171.6
Japan . . . . . { s)	2,864	2,748	2,679	104.2	106.9	414,215	383,535	421,892	108.0	98.2
Syria and Lebanon	3,459	3,136	3,487	110.3	99.4	394,384	356,810	388,873	110.5	101.4
	51	61	91	84.7	53.1	4,409	4,880	7,265	90.3	60.7
TOTALS . . .	6,770	6,330	6,655	107.1	102.0	863,477	791,234	861,310	109.1	100.3

\*) Countries not included in the totals. — s) Spring cocoons. — t) Summer-autumn cocoons

In Spain the condition of the mulberries has remained good and rearings have been made under very favourable conditions. An official estimate indicates that the quantity of silkworms placed in incubation is smaller than in 1932 and it is expected that production of cocoons will be somewhere between 880,000 and 1,100,000 lb against 1,726,000 lb on the average of 1927-31.

In the other European producing countries of minor importance (Yugoslavia, Hungary, Rumania and Czechoslovakia) condition has generally not been good; cold and unfavourable weather in Czechoslovakia where a production almost the same as that of 1932, which was 44,000 lb, was expected; adverse weather in Rumania with insufficient insolation with a probability of production below that of last season, already very poor and representing scarcely 40-45 % of the average.

As regards the East, weather in Turkey is known to have been unfavourable to the development of the silkworms, which were rather late with the result that production seems to be slightly smaller than that of 1932, which, according to unofficial estimates was 3,700,000 lb.

In Syria and Lebanon the cold, of which complaints were made in certain restricted areas, injured rearings of silkworms, which were, however, carried out normally on the whole; here, too, sericulture is distinctly declining, only about 53,000 ounces of eggs having been put in incubation, that is, a little more than half of the average, so that production was very poor and estimated at only 4,000,000 lb against over 7,000,000 on the average during the five year period. As regards Persia it is known that the production of cocoons is considered good and above that of all preceding seasons.

The most important producers of the Far East (excluding China) cling tenaciously to their traditional rearings despite the serious repercussions of the general economic situation on the silk industry and the numerous elements of uncertainty for eggs on the market. In fact, both Japan and China have totals for eggs placed in incubation that are considerably above the average and production has generally been very high. In Japan rearings have been carried out under excellent conditions and the weather has on the whole been propitious. In Korea also the season has been such as to allow good yields, sometimes far above the average, to be obtained. For China and the U. S. S. R. no information is yet available of a character to enable estimates of cocoon production even of a very approximate kind, to be given for the current year. The production of China appears to be good in quality but inferior to that of 1932 in quantity.

In the U. S. S. R. the plan established last winter fixed 33,000,000 lb of cocoons as the quantity to be bought by the Government from rearers in 1933, on the basis of an average yield of 62.5 lb per ounce; in 1932 the Government bought 22,500,000 lb against 27,600,000 lb in 1931 and 32,000,000 lb in 1930. The steady decline in quantity due to a continued decrease in production, has caused the Government of the U. S. S. R. to take a series of measures to stimulate rearers to increase their production; it appears that in Soviet Turkestan the production of cocoons has this year been very large.

At the present time there are important gaps in the statistical data of production and it is therefore impossible to calculate with any precision what will be the world production of fresh cocoons during the present season; however, taking into account all the information that has reached the Institute and the official and private estimates of production in the various countries, it may be stated in a sufficiently approximate way that production, excluding that of China and of India, is about 990 million lb against 925 million last year and an average of 1,021.8 million for the preceding quinquennium.

The increase in production as compared with 1932 is almost entirely due to the production in the Far East, which has more than compensated for the reduction in the majority of the other producing countries.

M. C.

## FODDER CROPS

*Germany* : In the western and southern regions, pastures were utilized larger than in the east where the dairy cattle, owing to fodder shortage had already been stabled early.

*Austria* : The condition of fodder crops, which on November 1 was still capable of classification, was as follows : Mangolds : 2.4 (against 2.5 on October 1 this year and 2.7 on November 1, 1932) ; red clover : 2.3 (2.2, 2.5) ; alfalfa : 2.8 (2.4, 2.8) ; mixed clover : 2.4 (2.3, 2.6) ; permanent meadows : 2.2 (2.3, 2.5) and pastures : 3.0 (2.5, 2.9).

Production of the most important fodder crops in 1933 was as follows :

Crops	1933				1932 Total	Average 1927 to 1931 — Total	1933				1932 Total	Average 1927 to 1931 — Total	% 1933	
	1st Cutting	2nd Cutting	3rd Cutting	Total			1st Cutting	2nd Cutting	3rd Cutting	Total			1932 = 100	Aver. = 100
	(000 centals)						(000 short tons)							
Fodder roots of all kinds . . . . .	—	—	—	44,714	47,563	49,657	—	—	—	2,236	2,378	2,483	94.0	90.0
Red clover (hay) . . . . .	8,157	5,137	4,189	17,483	12,522	15,785	408	257	209	874	626	789	139.6	110.8
Alfalfa (hay) . . . . .	2,205	1,720	1,984	5,909	4,189	3,860	110	86	99	295	209	193	141.1	153.1
Mixed clover (hay) . . . . .	2,359	1,984	1,852	6,195	4,008	5,293	118	99	93	310	200	265	154.7	117.0
Permanent meadows capable of one or more cuttings (hay) . . . . .	55,777	19,621	3,086	78,484	65,281	71,684	2,789	981	154	3,924	3,264	3,584	120.2	109.5

*Estonia* : Production of first crop clover in 1933 was 8,510,000 centals (425,000 short tons) against 9,379,000 (469,000) last year ; percentage : 90.7. The corresponding figures for permanent meadow hay are 16,755,000 (838,000) ; 21,350,000 (1,068,000) ; 78.5 %.

*Irish Free State* : The unusually dry summer had a slightly adverse effect on meadows and pasture, but not sufficient to cause any serious reduction in hay or pasturage. Ample supplies of both green and dry feeding and concentrates are available for all classes of stock.

*France* : Thanks to the rainy, mild weather, which has prevailed throughout the country since the beginning of October, the situation of meadows and pastures has again become normal ; in the southwest, the third cutting of temporary and permanent meadows was abundant, but the rainy weather will not permit the drying of the hay. On the whole, the supplement of feed thus obtained is small owing to the fact that the coming cold weather will not permit grazing for any length of time. Fodder sowings have been effected under good conditions and have come up well.

*Great Britain and Northern Ireland* October was on the whole a favourable month for agriculture in England and Wales. During the first three weeks the weather generally was mild with some rain which was beneficial to the pastures and root crops and of assistance in connection with the seasonal work on the land. During the last week of the month there was a colder spell with snow in some parts of the country followed by rain. Some frosts were experienced, but no great damage has been done. Root crops remaining in the ground showed some improvement at the end of the month.

Pastures made considerable growth during the month. Mangolds suffered less from the drought than turnips and swedes and while roots are little below average in size they are satisfactory as regards quality and condition. The yield per acre is forecast at 17.1 long tons against an average of 18.9 for the ten years 1923-32. Turnips and swedes are described as a variable crop, generally below average; many crops of swedes are badly mildewed. As estimated at present, the yield is expected to be about 10.6 long tons per acre as compared with a ten year's average of 12.6.

Production of turnips in England and Wales is estimated at 131,219,000 centals (6,561,000 short tons) against 168,941,000 (8,447,000) in 1932 and 157,233,000 (9,362,000) on the average for 1927-1931; percentages: 77.7 and 70.1. Production of mangolds: 91,056,000 (4,553,000) against 97,126,000 (4,856,000) and 120,333,000 (6,017,000) respectively, 93.8% and 75.7%.

In Scotland in the second half of October, rainfall was fairly heavy at times and both root crops and pastures showed a decided improvement. Turnips did not recover as well as swedes or mangolds and in most districts the prospects of the turnip crop are still very unsatisfactory; damage has been caused by mildew, which is very general.

In Northern Ireland the mangold crop grew out well and satisfactory yields should be obtained. A large percentage had been raised and stored by the end of the month. Good progress was made by the turnip crop during the last fortnight but generally yields are likely to be considerably below the average. The estimated average yield of the entire hay crop is 1.9 tons per statute acre as against 1.7 in 1932 and 1.9 in 1931. The average yield for the five years 1928-1932 amounted to 1.8.

Production of permanent hay in Northern Ireland is estimated at 10,653,000 centals (533,000 short tons) against 9,931,000 (497,000) in 1932 and 10,673,000 (534,000) on the average for 1927-1931; percentages: 107.3 and 99.8; rotation hay: 8,198,000 (410,000) against 7,645,000 (382,000) and 8,536,000 (427,000) respectively: 107.2% and 96.0%.

*Hungary*: Supplies of fodder of all kinds are adequate for the wintering of livestock in all departments.

*Italy*: Fodder crops have, in general, given good yields, which are judged to be sufficient to meet requirements. In the latter half of October the winter irrigation of *marcite* began; the autumn winter pastures show a fair growth, the meadows are being grazed.

*Lithuania*: Fodder crops have grown well under average weather conditions.

*Poland*: In 50% of the reports of agricultural correspondents, it is stated that conditions for the second cutting of hay were in general unfavourable, particularly in the eastern departments where moisture was excessive.

*Switzerland* : Fodder production this year on the whole nearly corresponds to that of last year as regards both quantity and quality. Quality of the hay is rather inferior whereas that of aftermath and autumn pastures is excellent. Stocks of stored fodder should apparently assure a normal wintering of livestock. As the autumn was free from serious frosts, pastures could be utilised satisfactorily. For this reason demand for hay and aftermath has until now remained of little importance.

*Czechoslovakia* : Production of clover and meadow aftermath was very small. Stubble clover is mostly short, thin and irregular. On November 1, crop condition of meadows was below the average.

*Canada* : Area and production of fodder crops in 1933 are estimated as follows :

	1933	1932	Average 1927-31	% 1933 1932=100	% 1933 Average=100
<i>Area</i> (ooo acres).					
Turnips . . . . .	184	175	196	105.3	93.7
Alfalfa . . . . .	722	666	773	108.4	93.4
Hay and clover . . . . .	8,876	8,812	10,052	100.7	88.3
Fodder maize . . . . .	379	366	420	103.7	90.3
<i>Production.</i>					
Turnips . . . . . (ooo centals)	34,776	37,766	37,511	92.1	92.7
(ooo sh. tons)	1,739	1,888	1,876		
Alfalfa . . . . . (ooo centals)	32,980	35,270	36,119	93.5	91.3
(ooo sh. tons)	1,649	1,763	1,806		
Hay and clover . . (ooo centals)	225,820	271,180	320,300	83.3	70.5
(ooo sh. tons)	11,291	13,559	16,015		
Fodder maize . . . (ooo centals)	62,100	57,152	67,582	108.7	91.9
(ooo sh. tons)	3,105	2,858	3,379		

*Algeria* : The persistent drought has greatly injured pastures and tracks, of which vegetation at the end of October was almost non-existent save in some rare spots that benefited by the showers at the end of September and beginning of October. The recent rains at the end of October improved the situation but in areas exposed to frosts the regeneration of the pasture will probably not take place in time before the advent of severe cold.

*Egypt* : Sowing of *bersim* (clover) is over in early-sown areas in Lower Egypt and in lands under perennial irrigation system in Upper Egypt. It has been started in lands under basin irrigation system during the latter half of October. Germination and growth are satisfactory. Crop condition : 99 on 1 November 1933, against 100 on 1 November 1932.

*French Morocco* : Owing to the drought, growth has been checked on seasonal pastures. General storms on October 19 and 20 throughout Western Morocco, brought a quite insufficient quantity of moisture to revive pastures, except at some specially favoured points.

*Tunis* : Pastures were nearly bare in all regions at the end of October ; in the South, however, rainfall on 30 and 31 October should permit them to revive.

In the North sowings of fodder crops had been nearly completed at the end of October ; they were effected on dry land.

## LIVESTOCK AND DERIVATIVES

### Livestock in Latvia.

Classification	1933	1932	1931	1930	1929	1928	1927	1926	1925
(1000 head)									
<i>Horses</i> . . . . .	370.2	366.0	366.3	359.0	356.3	365.2	369.3	365.0	351.9
Foals under 1 year old . . . .	14.4	14.8	16.6	13.1	—	—	—	—	—
" 1 to 3 year old . . . . .	29.1	26.2	22.4	22.9	—	—	—	—	—
Mares, horses and stallions:									
3 to 15 years old . . . . .	290.9	291.7	297.4	296.3	—	—	—	—	—
15 years old and over . . . .	35.8	33.4	29.9	26.7	—	—	—	—	—
<i>Cattle</i> . . . . .	1,555.8	1,153.1	1,116.9	1,026.3	978.4	960.6	966.6	955.0	915.8
Calves under 1 year old . . . .	165.5	152.6	173.1	165.6	—	—	—	—	—
Heifers 1 year old and over . .	150.9	169.2	155.4	101.1	—	—	—	—	—
Dairy cows . . . . .	802.9	784.3	745.2	728.4	—	—	—	—	—
Oxen and bulls:									
1 to 2 years olds . . . . .	24.2	31.3	31.8	21.0	—	—	—	—	—
2 years old and over . . . . .	12.3	15.7	11.4	10.2	—	—	—	—	—
<i>Sheep</i> . . . . .	1,114.3	984.0	923.1	872.9	905.5	1,090.4	1,127.5	1,152.0	1,181.6
Lambs under 1 year old . . . .	594.8	512.2	475.6	452.3	—	—	—	—	—
Wethers and rams 1 year old and over . . . . .	519.5	471.8	447.5	420.6	—	—	—	—	—
<i>Pigs</i> . . . . .	585.9	581.6	712.1	522.7	382.2	535.0	534.6	521.0	497.1
Pigs under 2 months old . . . .	172.0	160.0	203.5	160.5	—	—	—	—	—
" 2 to 6 months old and . .	209.1	189.3	267.8	198.6	—	—	—	—	—
Sows and boars 6 months old and over . . . . .	81.8	77.4	94.2	65.0	—	—	—	—	—
Other pigs 6 months old and over . . . . .	123.0	154.9	146.6	98.6	—	—	—	—	—

### Current information on livestock and derivatives.

*Irish Free State* : Ample supplies of feed and concentrates are available for all classes of stock. The effect of the dry summer has been to depreciate milk yields.

*France* : The livestock situation has improved with the end of the drought and the revival of pastures.

The market has improved a little; offers are less abundant and quotations have again risen. Meat consumption has apparently risen again and exceeds that of the last two years.

Milk and butter production has considerably increased as a result of the rains and mild temperatures.

*Great Britain and Northern Ireland* : In England and Wales the supply of winter keep is likely to be smaller in quantity than usual owing to the low yield of the fodder crops. Milk yields have shown some improvement.

In Northern Ireland both store and dairy cattle were in good condition generally at the end of the month. The milk yield, however, continues to be slightly below normal dimensions for the time of the year. The condition of sheep generally at the end of the month was fairly satisfactory in most districts.

In Scotland, there is no scarcity of concentrated feeding stuffs with the exception of milling offals, the supplies of which are not equal to the demand. Fodder is plentiful and of good quality. The milk yield is rather below the average for the season.

*Netherlands* : In October feed for dairy cows was in general rather satisfactory. Milk production was normal in Overijssel and in southern Zeeland. In Limburg and Zeeland a decrease of nearly 10 % was recorded. In the other provinces production also decreased but the difference does not exceed 5 %.

*Switzerland* : Native egg production has recently been greatly reduced and offers have greatly diminished. In the principal producing countries, where layings are also decreasing, prices also show a tendency to rise ; imported eggs are however, being offered at extraordinarily low prices. The Swiss Co-operative Societies for the sale of eggs have raised their prices and now pay the following prices per piece for deliveries to the central dépôt.

Eggs weighing over 60 gm. . . . .	15-17 cent
Eggs weighing 50-59 gm. . . . .	14-16 "
Eggs weighing 45-49 gm. . . . .	11-12 "

Prices are on the average 2 cents below those of the corresponding period of last year. It is to be anticipated that prices will hardly change in the near future.

*Algeria* : Due to the persistent drought and resulting lack of grass, native herds suffered from famine in several areas. Lambing was general toward the end of October; condition of the ewes often left much to be desired. Winter prospects do not appear good in consequence of the condition of pastures and the poor condition of the stock. Health was generally fairly good despite the numerous cases of rabies; aphtic fever seems to be on the decrease.

*French Morocco* : The disappearance of vegetation on seasonal pastures, the exhaustion of stubble and frequent watering difficulties render the livestock situation difficult. Except in some places where recent rains indicate an improvement, the state of mainten

ance is mediocre ; health nevertheless remains on the whole satisfactory and increase in losses is reported only in a few regions.

The economic situation remains bad ; quotations, on the whole fairly firm, fluctuate according to district as the natives are often obliged to sell their animals for cash.

*Tunis* : Health of livestock was fairly good at the end of October but the animals were very thin, particularly in the North and Centre. Lambing took place under good conditions in the North but the drought and shortage of pasture grass began to render the situation critical ; in the Centre the condition of ewes did not fulfil previous hopes ; in the South lambing became general at the end of October and rains fell at that period reviving pastures and permitting fairly good hopes.

*Union of South Africa* : The drought was broken in the early days of November by rains in the Orange Free State, Transvaal and Natal, while a few days later soaking rains fell in many districts of Cape Province.

At the end of September the situation in the inland areas was desperate. Natural grazing and supplies of fodder had been or were being rapidly exhausted ; drinking places for stock were few and far between and large quantities of maize and other feeds had to be purchased to keep the remaining stock alive. The most serious conditions were to be found in the inland areas of the Cape Northwest, Bechuanaland, the Northern Karroo, the whole of the Orange Free State and in the Northwestern Transvaal. Even in the relatively favoured Natal Province and the eastern Transvaal highveld conditions were causing grave concern and only general and soaking rains could relieve the desperate plight. In many areas the grazing has been so badly trodden out that it will require more than one good season to enable the veld to regain its normal vegetal covering. Mortality of stock was steadily rising, as was evidenced by the growing trade in skins in many districts.

The only areas in the Union where conditions were favourable were the west and south-west districts of the Cape Province as far inland as the southern and even central Karroo. A market recovery was reported from the west coast ; the increase in the price of wool and slaughter stock had materially raised the spirits of the farmers.

*New Zealand* (Telegram of 3 November) : Total production of wool in the Dominion in 1933-34 is estimated at 260 million pounds, a decrease of 8.1 % on that of 1932-33 (282.8 million) and of 4.1 % on that of 1931-32 (271.1 million). These figures comprise not only wool obtained from shearing but wool from wool-scouring and meat-freezing works.



## LATEST INFORMATION

*France* : The following estimates have been received from the Government :

			Average	1933	
	1933	1932	1927 to 1931	1932	Average
				= 100	= 100
Maize :	Production (ooo omitted)				
Centals . . . . .	9,245.0	9,024.8	11,031.4	102.4	83.5
Bushels. . . . .	16,508.9	16,115.7	19,699.1		
Potatoes :					
Centals . . . . .	331,230.3	363,409.8	331.524.9	91.1	99.9
Bushels. . . . .	552,039.5	605,670.9	552.530.5		
Sugar-beet :					
Centals . . . . .	144,525.5	167,338.4	151,186.5	80.4	95.6
Short tons . . . . .	7,226.2	8,366.8	7,559.2		
Linseed :					
Centals . . . . .	139.7	125.2	372.4	111.6	37.5
Bushels. . . . .	249.5	223.5	664.9		
Hempseed :					
Pounds . . . . .	670.4	1,873.9	3,542.4	35.8	18.9
Hops :					
Pounds . . . . .	3,644.9	1,710.8	8,261.6	213.1	44.1

*Italy* : On the basis of the information received at the last moment the following definitive data of production in 1933 with the comparable figures for last year and the average for 1927-31 are published :

			Average	1933	
	1933	1932	1927 to 1931	1932 = 100	Average = 100
Maize :	Production (ooo omitted)				
Centals . . . . .	52,530.0	61,885.4	47,772.8	84.9	110.0
Bushels . . . . .	93,803.8	110,509.9	85,308.9		
Rice :					
Centals . . . . .	13,399.7	14,476.5	14,610.7	92.6	91.7
Bushels . . . . .	29,776.4	32,169.4	32,467.6		
Potatoes :					
Centals . . . . .	52,376.1	62,543.9	41,276.8	83.7	126.9
Bushels . . . . .	87,291.8	104,237.7	68,793.2		

	1933	1932	Average 1927 to 1931	1932 = 100	Average = 100
Production (ooo omitted)					
Sugar-beet :					
<i>Centals</i> . . . . .	47,314.9	55,001.3	58,744.5	86.0	80.5
<i>Short tons</i> . . . . .	2,365.7	2,750.0	2,937.2		
Grapes :					
<i>Pounds</i> . . . . .	11,853,965.0	16,150,676.0	13,841,782.0	73.4	85.6
Olives :					
<i>Pounds</i> . . . . .	3,091,330.0	2,863,312.0	2,792,907.0	108.0	110.7
Flax :					
<i>Pounds</i> . . . . .	3,990.0	4,888.0	5,398.0	81.6	73.9
Linseed :					
<i>Centals</i> . . . . .	50.2	69.3	142.8	72.4	35.1
<i>Bushels</i> . . . . .	89.6	123.8	255.0		
Hemp (Fibre) :					
<i>Pounds</i> . . . . .	127,749.0	121,907.0	177,868.0	104.8	71.8

# TRADE

COUNTRIES	SEPTEMBER				TWO MONTHS (August 1-September 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-13
<b>Wheat. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	410	84	0	0	569	185	0	0	1,808	0
Hungary . . . . .	2,418	606	0	0	3,355	1,001	0	0	3,254	2
Lithuania . . . . .	0	0	0	0	0	0	0	0	2	0
Poland . . . . .	15	15	46	64	49	24	62	64	855	483
Rumania . . . . .	0	0	2	2	0	22	2	2	24	9
Yugoslavia . . . . .	75	75	0	0	110	201	0	0	503	0
U. S. S. R. . . . .	3,682	3,058	...	207	4,881	3,635	...	1,627	10,862	1,373
Canada . . . . .	11,799	16,125	0	2	16,991	27,099	4	9	144,086	31
United States . . . . .	26	1,488	617	353	37	3,827	1,206	650	11,502	5,582
Argentina . . . . .	4,098	1,973	—	—	13,863	4,251	—	—	76,324	—
Chile . . . . .	0	0	179	0	0	2	368	0	9	858
Turkey . . . . .	37	7	0	0	134	9	0	0	260	0
Algeria . . . . .	666	642	35	29	1,422	2,011	55	90	5,331	908
French Morocco . . . . .	...	...	...	...	448	20	...	...	3,503	35
Tunis . . . . .	110	492	57	40	370	1,213	108	60	3,389	344
Australia . . . . .	3,336	2,989	0	0	7,000	4,310	0	0	72,197	0
<i>Importing Countries:</i>										
Germany . . . . .	1,975	3,045	1,310	1,631	2,789	3,933	2,665	3,803	12,540	18,433
Austria . . . . .	0	0	172	410	0	0	664	758	0	7,180
Belgium . . . . .	71	205	1,574	1,766	183	421	4,010	3,730	2,163	25,704
Denmark . . . . .	7	7	851	694	7	7	1,585	1,563	15	6,202
Spain . . . . .	0	0	0	0	0	0	0	0	0	0
Estonia . . . . .	0	0	0	0	0	0	0	0	0	0
Irish Free State . . . . .	0	0	869	798	0	0	1,795	1,316	40	8,373
Finland . . . . .	0	0	68	75	0	0	218	154	0	906
France . . . . .	600	4	1,343	2,522	814	4	3,049	9,041	49	24,371
Gr. Brit. and N. Irel. . . . .	33	37	11,918	9,350	93	84	21,114	19,670	553	122,626
Greece . . . . .	0	0	840	924	0	0	1,647	1,942	0	11,790
Italy . . . . .	0	7	562	553	0	7	1,113	1,202	13	11,206
Latvia . . . . .	0	0	0	2	0	0	0	13	2	18
Norway . . . . .	0	0	243	302	0	0	542	443	0	3,552
Netherlands . . . . .	2	192	2,447	1,202	4	194	3,909	2,471	514	15,622
Portugal . . . . .	—	—	11	31	—	—	44	159	—	505
Sweden . . . . .	0	7	132	265	0	7	229	774	13	1,940
Switzerland . . . . .	0	0	1,343	988	4	9	2,273	2,081	15	11,473
Czechoslovakia . . . . .	0	0	106	0	0	0	79	333	2	6,594
China . . . . .	0	0	0	265	0	0	1,076	597	0	26,890
India . . . . .	4	4	0	0	7	7	0	0	46	1,060
Japan . . . . .	—	—	721	694	—	—	1,400	1,098	—	11,667
Syria and Lebanon . . . . .	64	71	18	20	143	110	46	37	278	254
Egypt . . . . .	0	0	2	0	2	0	2	0	9	4
Union of South Africa . . . . .	...	...	...	...	...	...	...	...	...	161
New Zealand . . . . .	...	...	...	...	...	...	...	...	423	736
Totals . . . . .	29,428	31,133	25,360	23,295	53,275	52,593	49,267	53,754	350,584	300,202
<b>Rye. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	15	0	0	7	24	0	0	66	0
Hungary . . . . .	613	77	0	0	1,058	190	0	0	1,651	0
Lithuania . . . . .	0	0	0	0	0	2	0	0	35	0
Poland . . . . .	922	584	24	9	1,265	1,005	24	9	6,572	216
Rumania . . . . .	0	0	0	0	0	9	0	0	9	0
U. S. S. R. . . . .	542	1,345	—	—	703	1,345	—	—	5,199	—
Canada . . . . .	624	238	0	0	714	908	0	0	1,605	0
United States . . . . .	2	0	—	—	4	0	—	—	33	—
Argentina . . . . .	115	7	—	—	1,008	77	—	—	3,206	—
Turkey . . . . .	84	40	0	0	143	66	0	0	348	0
Algeria . . . . .	2	2	0	0	4	9	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	796	403	66	809	1,334	831	1,488	2,141	2,978	7,390
Austria . . . . .	0	0	0	13	0	0	2	90	0	496
Belgium . . . . .	7	44	485	139	7	108	765	359	368	2,463
Denmark . . . . .	0	0	869	622	0	0	1,526	1,340	0	5,776
Finland . . . . .	0	0	97	511	0	0	276	655	0	1,426
France . . . . .	0	0	18	46	0	0	40	168	0	465
Italy . . . . .	0	0	7	31	0	0	9	44	0	263
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Norway . . . . .	0	0	328	298	0	0	522	346	0	2,943
Netherlands . . . . .	2	7	375	348	7	13	957	864	75	4,330
Sweden . . . . .	0	0	4	13	0	0	13	231	15	271
Switzerland . . . . .	0	0	2	37	0	0	7	64	0	324
Czechoslovakia . . . . .	0	0	0	18	13	2	2	82	66	99
Totals . . . . .	3,709	2,762	2,275	2,894	6,267	4,589	5,631	6,393	22,250	26,464

1) 2) 9) See notes page 824.

COUNTRIES	SEPTEMBER				TWO MONTHS (August 1-September 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33

<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	203	20	7	2	575	20	13	9	2,229	68
Belgium . . . . .	4	7	24	9	9	9	35	20	53	66
Bulgaria . . . . .	18	11	0	0	20	24	0	0	55	0
Spain . . . . .	4	2	0	0	4	2	0	0	9	0
France . . . . .	295	284	40	44	758	403	112	90	4,162	529
Hungary . . . . .	143	146	0	0	254	207	0	0	864	0
Italy . . . . .	478	448	31	13	664	933	64	31	3,697	304
Lithuania . . . . .	2	2	0	0	7	4	0	0	26	0
Poland . . . . .	11	18	0	0	15	33	0	0	234	0
Rumania . . . . .	2	9	0	0	7	9	0	0	13	2
Yugoslavia . . . . .	2	4	0	0	7	9	0	0	57	0
Canada . . . . .	1,082	754	11	2	2,024	1,402	24	2	9,566	49
United States . . . . .	620	728	0	0	1,329	1,444	0	0	8,371	2
Argentina . . . . .	121	71	—	—	218	132	—	—	1,623	—
Chile . . . . .	0	0	0	0	0	4	4	0	4	476
India . . . . .	26	53	0	0	46	95	0	0	340	2
Turkey . . . . .	547	439	4	2	1,133	758	7	2	6,094	15
Japan . . . . .	0	0	0	0	0	0	0	0	0	0
Algeria . . . . .	51	60	7	2	112	99	11	7	520	71
Tunis . . . . .	13	15	2	0	20	33	4	2	172	55
Australia . . . . .	714	948	0	0	1,554	1,645	0	0	12,553	0
<i>Importing Countries:</i>										
Austria . . . . .	0	0	33	33	0	0	57	77	2	578
Denmark . . . . .	2	2	121	55	4	4	187	130	18	794
Estonia . . . . .	0	0	0	0	0	0	0	0	0	0
Irish Free State . . . . .	0	0	121	150	0	0	353	518	2	1,797
Finland . . . . .	0	0	95	110	0	0	198	227	0	1,239
Gr. Brit. and N. Irel. . . . .	280	390	840	593	646	880	2,011	1,351	4,200	9,495
Greece . . . . .	0	0	0	2	0	0	2	7	0	22
Norway . . . . .	0	0	104	86	0	0	159	157	4	1,135
Netherlands . . . . .	0	2	112	62	0	11	220	126	24	933
Portugal . . . . .	—	—	20	42	—	—	31	51	—	218
Sweden . . . . .	0	0	2	0	0	0	2	4	0	9
Czechoslovakia . . . . .	0	0	0	49	0	0	9	97	7	437
Ceylon . . . . .	—	—	35	26	—	—	62	57	—	384
China . . . . .	2	9	123	373	22	49	260	763	1,193	5,741
Java and Madura . . . . .	—	—	—	—	—	—	106	79	—	957
Indo-China . . . . .	—	—	31	24	—	—	53	57	—	342
Syria and Lebanon . . . . .	4	0	82	9	15	2	163	35	99	802
Egypt . . . . .	0	0	11	73	0	0	18	90	2	205
French Morocco . . . . .	—	—	—	—	0	0	0	0	18	7
Union of South Africa . . . . .	—	—	—	—	0	0	0	0	2	258
New Zealand . . . . .	—	—	—	—	—	—	—	—	—	—
Totals . . . . .	4,723	4,422	1,856	1,761	9,443	8,211	4,165	3,998	55,022	21,334

<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	77	31	0	0	161	53	0	0	172	0
Spain . . . . .	9	0	0	0	20	2	0	0	53	0
Hungary . . . . .	161	20	0	0	311	29	0	0	1,504	0
Poland . . . . .	373	437	0	0	443	538	0	0	3,558	0
Rumania . . . . .	2,641	3,195	0	0	4,363	5,487	0	0	11,771	0
Czechoslovakia . . . . .	141	437	0	0	150	567	0	0	3,516	2
U. S. S. R. . . . .	2,205	2,381	—	—	3,206	2,619	—	—	7,665	—
Canada . . . . .	29	368	0	0	57	1,111	0	0	2,588	0
United States . . . . .	194	434	—	—	401	891	—	—	4,398	—
Argentina . . . . .	117	2	—	—	545	20	—	—	8,774	—
Chile . . . . .	84	2	0	0	216	4	0	0	439	0
India . . . . .	0	0	7	0	0	2	24	0	4	20
Syria and Lebanon . . . . .	—	—	—	—	13	11	24	20	33	337
Turkey . . . . .	104	132	0	0	289	287	0	0	990	0
Egypt . . . . .	49	2	0	0	106	2	0	0	152	0
French Morocco . . . . .	—	—	—	—	569	509	—	—	3,594	—
Tunis . . . . .	20	340	13	7	40	924	29	13	2,758	40
Australia . . . . .	53	4	0	0	320	11	0	0	1,420	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	24	134	0	0	368	478	4	3,763
Austria . . . . .	0	0	101	152	0	0	207	267	0	1,982
Belgium . . . . .	106	154	1,149	783	154	293	2,090	1,321	1,400	9,083
Denmark . . . . .	42	35	198	82	42	37	315	245	461	2,231
Irish Free State . . . . .	4	0	0	2	4	0	66	2	2	139
France . . . . .	0	0	787	985	0	0	1,246	1,607	4	7,641
Gr. Brit. and N. Irel. . . . .	7	9	2,582	1,724	11	13	3,616	2,577	40	13,558
Greece . . . . .	0	0	2	0	0	0	0	0	2	20
Italy . . . . .	0	0	53	31	0	0	84	55	0	593
Norway . . . . .	0	0	110	9	0	0	117	9	0	159
Netherlands . . . . .	0	2	1,367	728	0	2	2,366	1,274	112	8,807
Switzerland . . . . .	0	0	97	320	0	0	134	478	0	4,268
Yugoslavia . . . . .	49	0	0	0	86	0	0	0	95	4
Algeria . . . . .	86	13	97	390	254	37	240	741	159	2,017
Totals . . . . .	6,551	7,998	6,587	5,347	11,761	13,449	10,928	9,087	52,072	54,664

COUNTRIES	SEPTEMBER				TWO MONTHS (August 1-September 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	0	4	0	0	2	7	0	0	55	9
Hungary . . . . .	110	0	0	0	207	0	0	0	465	0
Lithuania . . . . .	0	0	0	0	0	0	0	0	0	0
Poland . . . . .	4	4	0	0	18	7	0	0	305	0
Rumania . . . . .	60	258	0	0	60	322	0	0	639	0
Czechoslovakia . .	152	201	0	0	223	306	0	0	3,038	0
Yugoslavia . . . .	15	0	0	0	18	0	0	0	0	0
Canada . . . . .	57	357	0	79	137	631	0	187	3,766	683
United States . . .	29	128	0	0	75	485	2	0	1,217	29
Argentina . . . . .	284	553	—	—	1,054	1,243	—	—	10,384	—
Chile . . . . .	13	18	0	0	22	35	0	0	227	0
Algeria . . . . .	9	9	22	2	11	22	29	11	130	57
Tunis . . . . .	4	20	0	0	15	53	4	0	126	0
Australia . . . . .	0	22	0	0	4	42	0	0	93	2
<i>Importing Countries:</i>										
Germany . . . . .	324	0	4	11	381	0	40	15	234	423
Austria . . . . .	0	0	31	86	0	0	79	157	0	634
Belgium . . . . .	0	2	7	20	0	4	20	90	7	877
Denmark . . . . .	0	7	44	26	9	7	99	37	71	375
Estonia . . . . .	0	0	0	0	0	0	0	0	0	0
Finland . . . . .	0	0	68	0	0	0	104	9	2	163
France . . . . .	0	0	15	101	0	0	55	42	4	1,153
Gr. Brit. and N. Irel.	2	2	342	401	4	2	675	999	24	6,347
Italy . . . . .	0	0	137	399	0	0	207	463	0	2,533
Latvia . . . . .	0	0	0	0	0	0	0	0	11	0
Norway . . . . .	0	0	0	4	0	0	0	11	2	13
Netherlands . . . .	2	0	108	154	2	0	273	320	26	2,610
Sweden . . . . .	0	0	165	66	0	7	214	150	46	580
Switzerland . . . .	0	0	289	295	0	0	476	553	0	4,899
<b>Totals . . . . .</b>	<b>1,065</b>	<b>1,585</b>	<b>1,232</b>	<b>1,644</b>	<b>2,242</b>	<b>3,173</b>	<b>2,277</b>	<b>3,423</b>	<b>20,873</b>	<b>21,544</b>
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<b>ELEVEN MONTHS (November 1-September 30)</b>										
<i>Exporting Countries:</i>					1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
Bulgaria . . . . .	57	141	0	0	3,197	2,663	0	0	2,890	0
Rumania . . . . .	701	1,931	0	0	33,839	32,452	0	2	34,421	2
Yugoslavia . . . . .	1,168	2	0	0	13,078	1,550	0	26	1,825	26
United States . . .	240	146	2	9	3,600	2,044	79	207	3,084	220
Argentina . . . . .	10,064	10,732	—	—	93,869	165,582	—	—	176,104	—
Java and Madura . .	53	99	—	—	1,499	2,390	—	—	2,436	—
Indo-China . . . .	902	474	—	—	5,258	2,579	—	—	3,459	—
Syria and Lebanon .	...	...	...	...	1)	7	1)	260	33	37
Turkey . . . . .	2	29	0	0	267	355	0	0	373	0
Egypt . . . . .	2	2	0	2	214	13	4	46	15	46
Union of South Afr.	0	1,393	0	0	3,510	3,821	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	425	1,250	0	0	5,891	16,239	0	17,007
Austria . . . . .	0	0	467	593	0	0	10,527	7,194	0	7,628
Belgium . . . . .	262	57	1,276	1,618	1,186	1,268	16,527	17,650	1,385	18,700
Denmark . . . . .	0	0	401	756	0	0	12,974	20,301	0	21,231
Spain . . . . .	0	0	251	344	0	0	2,022	6,296	0	6,931
Irish Free State . .	0	0	328	1,239	0	0	6,404	12,624	0	13,642
Finland . . . . .	0	0	101	99	0	0	1,124	547	0	595
France . . . . .	0	0	1,195	2,787	2	26	15,419	23,526	26	25,869
Gr. Brit. and N. Irel.	176	218	6,010	6,206	1,735	2,952	54,099	58,674	3,208	64,058
Greece . . . . .	0	0	4	13	0	0	608	3,373	0	3,382
Hungary . . . . .	31	2	0	66	4,308	66	0	939	93	939
Italy . . . . .	198	0	448	558	2,105	4	2,216	15,474	7	15,737
Norway . . . . .	0	0	234	212	0	0	3,164	3,730	0	4,092
Netherlands . . . .	0	11	2,110	3,175	73	209	29,807	34,802	223	36,892
Poland . . . . .	0	0	2	9	0	0	79	119	0	126
Portugal . . . . .	—	—	95	190	—	—	1,294	1,290	—	1,407
Sweden . . . . .	0	0	359	410	0	0	4,910	5,792	0	6,135
Switzerland . . . .	0	0	112	500	0	2	1,790	3,444	2	3,717
Czechoslovakia . .	0	0	161	271	0	0	3,217	9,764	0	9,958
Canada . . . . .	0	0	154	174	20	13	3,951	3,459	13	3,891
Japan . . . . .	—	—	0	2	—	—	42	1,693	—	1,693
Tunis . . . . .	11	0	0	0	13	0	0	324	0	324
<b>Totals . . . . .</b>	<b>13,867</b>	<b>15,239</b>	<b>14,135</b>	<b>20,483</b>	<b>167,777</b>	<b>218,006</b>	<b>176,208</b>	<b>247,658</b>	<b>234,564</b>	<b>264,287</b>

1) See notes page 824.

COUNTRIES	SEPTEMBER				NINE MONTHS (January 1-September 30)				TWELVE MONTHS (January 1-DEC. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	9	46	0	0	170	597	0	0	871	0
Italy . . . . .	194	55	4	7	2,939	2,280	104	44	3,505	57
United States . . . . .	37	104	24	7	1,105	2,035	227	137	2,588	190
Brazil . . . . .	...	...	—	—	267	569	—	—	615	—
India . . . . .	2,227	3,397	93	29	35,312	41,394	384	476	48,001	683
Indo-China . . . . .	1,263	1,702	—	—	23,138	20,322	—	—	26,983	—
Siam . . . . .	2,866	2,892	—	—	27,814	25,355	—	—	34,106	—
Egypt . . . . .	97	2	0	0	1,521	187	7	708	1,032	710
<i>Importing Countries:</i>										
Germany . . . . .	51	68	443	827	679	818	5,481	6,054	1,047	8,481
Austria . . . . .	0	0	42	35	0	0	450	390	0	549
Belgium . . . . .	4	11	55	97	55	168	941	919	201	1,213
Denmark . . . . .	0	0	9	13	0	0	115	88	0	139
Estonia . . . . .	—	—	2	0	—	—	9	113	—	15
Irish Free State . . . . .	0	0	2	2	0	2	42	40	2	46
France . . . . .	53	62	1,808	635	648	604	9,927	5,961	860	8,327
Gr. Brit. and N. Irel. . . . .	29	7	201	265	126	137	1,938	2,019	163	2,747
Greece . . . . .	—	—	29	29	—	—	344	381	—	540
Hungary . . . . .	0	0	31	55	0	0	344	317	0	465
Latvia . . . . .	0	0	0	4	0	0	24	13	0	18
Lithuania . . . . .	0	0	2	2	0	0	13	13	0	20
Norway . . . . .	0	0	4	9	0	0	66	60	0	71
Netherlands . . . . .	106	262	187	567	990	1,358	3,003	2,249	1,854	2,605
Poland . . . . .	18	13	33	0	112	249	1,224	1,025	317	1,027
Portugal . . . . .	—	—	51	64	—	—	545	683	—	875
Sweden . . . . .	—	—	0	0	—	—	104	90	—	90
Switzerland . . . . .	0	0	18	15	0	0	432	265	0	432
Czechoslovakia . . . . .	0	0	117	82	0	0	966	820	0	1,096
Yugoslavia . . . . .	0	0	9	22	0	2	346	342	2	494
Canada . . . . .	2	0	55	22	15	9	564	520	9	593
Chile . . . . .	—	—	20	2	—	—	128	163	—	187
Ceylon . . . . .	0	0	575	653	2	2	7,494	8,067	4	10,384
China . . . . .	...	...	...	...	29	37	22,271	22,701	49	29,970
Java and Madura . . . . .	33	9	...	148	126	33	2,341	2,509	71	3,303
Japan . . . . .	9	7	249	282	311	635	2,366	2,577	1,034	3,369
Syria and Lebanon . . . . .	...	...	...	...	0	0	276	231	0	392
Turkey . . . . .	0	0	0	7	0	49	66	66	0	93
Algeria . . . . .	0	0	7	7	15	9	163	143	9	196
Tunis . . . . .	0	0	2	0	0	0	20	31	0	40
Union of South Africa . . . . .	...	...	...	...	0	0	701	575	0	895
Australia . . . . .	24	9	2	2	146	68	33	33	86	49
New Zealand . . . . .	...	...	...	...	0	0	49	42	0	64
Totals . . . . .	7,022	8,646	4,074	3,889	95,520	96,870	63,491	60,765	123,409	80,426
<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	0	0	0	2	15	0	2	4
Lithuania . . . . .	2	7	0	—	53	112	0	—	170	0
Argentina . . . . .	1,552	4,354	—	—	24,531	34,121	—	—	44,571	—
India . . . . .	1,049	148	0	0	4,299	1,272	0	0	1,728	0
Tunis . . . . .	0	2	0	0	2	22	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	0	2	443	919	29	13	6,462	7,198	20	9,841
Belgium . . . . .	7	4	176	287	33	121	2,335	2,549	139	3,671
Denmark . . . . .	—	—	7	31	—	—	355	379	—	534
Spain . . . . .	—	—	60	37	—	—	278	381	—	494
Finland . . . . .	0	0	9	9	0	0	66	42	0	75
France . . . . .	0	0	677	340	4	4	4,738	3,688	7	5,187
Gr. Brit. and N. Irel. . . . .	0	0	473	655	4	2	4,094	6,113	4	8,162
Greece . . . . .	0	0	9	15	0	0	90	60	0	88
Hungary . . . . .	2	0	0	0	4	9	31	0	9	29
Italy . . . . .	0	0	152	165	0	0	1,228	1,065	0	1,510
Latvia . . . . .	0	0	2	0	31	20	66	40	53	75
Norway . . . . .	0	0	51	44	0	0	357	293	0	403
Netherlands . . . . .	4	2	112	1,105	40	73	6,105	7,555	75	9,912
Poland . . . . .	0	0	7	7	2	2	276	139	4	271
Sweden . . . . .	—	—	40	84	—	—	668	816	—	957
Czechoslovakia . . . . .	0	0	24	101	2	2	326	536	2	798
Yugoslavia . . . . .	0	0	15	13	0	0	77	84	0	115
Canada . . . . .	0	0	0	0	243	2	0	256	205	256
United States . . . . .	—	—	1,109	337	—	—	4,987	3,463	—	4,502
Japan . . . . .	—	—	93	2	—	—	355	112	—	148
Australia . . . . .	0	0	33	15	0	0	328	401	0	450
Totals . . . . .	2,616	4,519	3,442	4,166	29,297	35,777	33,237	35,170	47,013	47,482

x) 3) See notes page 824.

COUNTRIES	SEPTEMBER				NINE MONTHS (January-1 September 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	392	205	2	15	1,316	692	154	796	1,565	802
Denmark . . . . .	25,397	27,587	77	0	255,358	269,393	785	851	347,886	922
Estonia . . . . .	2,557	3,153	0	0	15,964	22,300	0	0	27,626	0
Irish Free State . . . . .	5,359	6,252	2	9	43,506	29,716	15	2,604	36,932	2,632
Finland . . . . .	2,233	2,280	309	0	19,564	25,832	659	0	32,020	0
Hungary . . . . .	957	498	0	0	5,684	3,042	0	0	4,495	0
Latvia . . . . .	3,858	4,848	0	0	28,193	32,181	0	0	41,002	2
Lithuania . . . . .	2,496	3,053	0	0	17,223	18,071	0	0	21,883	0
Norway . . . . .	0	73	11	7	761	1,971	110	79	2,421	90
Netherlands . . . . .	3,618	3,499	141	71	51,965	27,673	957	8,792	44,926	9,323
Poland . . . . .	496	37	0	392	2,474	2,648	2	809	2,707	866
Sweden . . . . .	4,608	2,780	9	2	26,473	23,279	57	24	29,875	33
U. S. S. R. . . . .	—	—	—	—	18,422	22,401	—	—	68,198	—
Argentina . . . . .	593	2,588	—	—	19,892	39,410	—	—	55,923	—
India . . . . .	18	13	60	42	146	172	364	311	260	428
Syria and Lebanon . . . . .	—	—	—	—	84	183	1,243	1,323	315	1,867
Australia . . . . .	11,506	15,792	—	—	123,221	142,404	2	0	229,105	0
New Zealand . . . . .	19,771	8,519	—	—	198,688	153,592	—	—	244,789	—
<i>Importing Countries:</i>										
Germany . . . . .	2	315	12,372	15,600	13	474	93,262	113,355	478	153,264
Belgium . . . . .	126	123	1,664	2,299	631	1,759	19,844	36,010	1,841	46,749
Spain . . . . .	2	2	0	0	15	37	26	44	42	42
France . . . . .	531	745	159	414	5,205	5,822	16,339	15,882	7,921	26,140
Gr. Brit. and N. Irel. . . . .	972	545	71,968	78,469	8,135	31,740	759,138	713,409	35,693	946,298
Greece . . . . .	—	—	55	82	—	—	417	911	—	1,197
Italy . . . . .	11	33	236	35	739	730	1,691	3,380	827	3,818
Switzerland . . . . .	0	0	110	15	2	4	939	6,914	7	8,151
Czechoslovakia . . . . .	22	0	364	198	24	26	831	2,328	26	2,703
Canada . . . . .	1,720	101	0	2	2,061	3,195	1,371	187	3,505	238
United States . . . . .	60	97	37	29	767	1,279	911	802	1,607	1,014
Ceylon . . . . .	—	—	42	37	—	—	454	443	—	602
Java and Madura . . . . .	—	—	—	—	—	—	6,892	6,010	—	8,792
Japan . . . . .	—	—	4	11	—	—	209	112	—	163
Algeria . . . . .	0	2	26	68	15	29	3,034	2,577	35	3,955
Egypt . . . . .	7	2	40	62	236	353	542	582	384	814
Tunis . . . . .	0	0	119	95	4	2	1,230	864	4	1,305
<b>Totals . . . . .</b>	<b>87,312</b>	<b>83,142</b>	<b>87,807</b>	<b>97,954</b>	<b>846,801</b>	<b>860,410</b>	<b>911,476</b>	<b>919,381</b>	<b>1,244,300</b>	<b>1,222,210</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	397	245	0	0	1,526	1,049	0	2	2,601	4
Denmark . . . . .	1,894	1,876	2	0	17,282	10,267	53	104	14,535	130
Finland . . . . .	913	1,008	2	2	6,442	5,609	20	13	7,225	26
Italy . . . . .	3,554	6,898	1,142	968	37,111	47,373	7,456	6,400	66,399	8,772
Lithuania . . . . .	324	174	0	0	1,279	1,299	2	2	1,768	7
Norway . . . . .	439	474	18	24	2,930	2,632	123	168	3,644	240
Netherlands . . . . .	12,683	17,864	93	82	107,683	129,553	567	767	170,061	1,076
Poland . . . . .	141	77	29	42	265	635	324	412	767	586
Switzerland . . . . .	4,462	4,923	359	364	34,125	32,355	2,498	3,655	43,658	4,755
Czechoslovakia . . . . .	245	351	384	331	1,892	4,608	2,255	2,284	6,124	3,071
Yugoslavia . . . . .	414	348	2	13	2,143	1,614	49	119	2,617	150
Canada . . . . .	14,121	13,872	75	46	38,475	55,656	644	710	86,940	1,166
Australia . . . . .	377	679	2	2	6,834	4,389	42	13	8,801	60
New Zealand . . . . .	5,135	6,307	—	0	160,815	138,199	4	2	200,491	2
<i>Importing Countries:</i>										
Germany . . . . .	260	353	8,459	12,529	3,003	2,895	69,183	81,214	4,237	108,688
Austria . . . . .	324	384	163	201	3,225	2,511	1,764	2,948	3,982	3,732
Belgium . . . . .	26	55	4,976	5,534	262	428	36,432	35,109	551	45,660
Spain . . . . .	9	15	245	289	624	198	1,550	1,660	238	2,480
Irish Free State . . . . .	9	0	4	265	11	29	326	1,704	37	2,019
France . . . . .	1,744	2,231	3,031	4,425	18,312	20,715	36,628	37,300	29,211	52,146
Gr. Brit. and N. Irel. . . . .	437	608	26,751	31,416	4,711	5,322	254,943	255,243	7,242	336,733
Greece . . . . .	49	112	11	35	730	220	688	1,283	620	1,753
Hungary . . . . .	9	2	0	49	42	29	11	11	33	11
Portugal . . . . .	—	—	22	49	—	—	293	353	—	608
Sweden . . . . .	—	—	115	119	—	—	633	683	—	1,045
United States . . . . .	95	101	2,729	4,665	1,082	1,107	35,056	37,878	1,490	55,629
India . . . . .	0	0	97	90	—	2	739	650	2	950
Java and Madura . . . . .	—	—	—	—	—	—	1,133	1,043	—	1,642
Syria and Lebanon . . . . .	—	—	—	—	22	22	1,023	562	68	1,195
Algeria . . . . .	7	7	582	1,949	95	110	7,815	8,016	159	11,100
Egypt . . . . .	4	37	690	302	95	185	4,028	3,289	254	5,260
Tunis . . . . .	22	0	190	179	55	9	1,953	1,446	13	2,191
<b>Totals . . . . .</b>	<b>48,094</b>	<b>59,001</b>	<b>50,173</b>	<b>63,921</b>	<b>451,071</b>	<b>469,020</b>	<b>468,235</b>	<b>485,043</b>	<b>663,768</b>	<b>652,887</b>

COUNTRIES	SEPTEMBER				TWO MONTHS (August 1-September 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	4,694	4,004	37	35	7,593	6,475	86	71	45,676	653
Argentina . . . .	44	82	—	—	137	198	—	—	556	—
Brazil . . . . .	—	—	—	—	2	2	—	—	22	—
India . . . . .	280	653	64	55	968	985	161	93	10,617	924
Egypt . . . . .	364	262	0	0	794	657	0	0	6,285	0
<i>Importing Countries:</i>										
Germany . . . . .	137	143	761	467	245	280	1,567	906	1,259	9,467
Austria . . . . .	0	0	49	33	0	0	101	57	0	432
Belgium . . . . .	53	18	137	115	90	40	324	198	298	1,896
Denmark . . . . .	—	—	11	13	—	—	31	18	—	143
Spain . . . . .	2	2	220	141	7	4	331	300	15	2,211
Estonia . . . . .	0	0	7	4	0	0	13	11	0	60
Finland . . . . .	0	0	15	13	0	0	33	22	0	174
France . . . . .	40	31	611	522	77	55	1,144	763	368	7,211
Gr. Brit. and N. Irel.	42	35	1,025	723	77	77	2,158	1,680	514	12,798
Greece . . . . .	0	0	13	0	0	0	20	24	0	174
Hungary . . . . .	0	0	37	18	0	0	79	46	0	410
Italy . . . . .	0	0	437	260	0	0	772	503	0	4,178
Latvia . . . . .	0	0	7	4	0	0	11	0	0	86
Norway . . . . .	0	0	2	4	0	0	4	9	0	55
Netherlands . . . .	2	2	64	35	4	2	119	79	7	763
Poland . . . . .	2	2	134	121	2	4	262	229	15	1,228
Portugal . . . . .	—	—	33	33	—	—	73	66	—	—
Sweden . . . . .	—	—	18	44	—	—	68	68	—	527
Switzerland . . . .	0	0	33	33	0	0	71	62	2	571
Czechoslovakia . .	11	15	143	139	18	24	251	262	106	1,768
Yugoslavia . . . .	0	0	9	18	0	0	33	42	0	194
Canada . . . . .	—	—	75	49	—	—	183	110	—	988
China . . . . .	—	—	—	—	—	—	251	487	—	2,806
Japan . . . . .	24	37	1,071	820	68	37	2,083	1,426	401	9,806
Algeria . . . . .	0	0	2	0	0	0	2	0	7	7
<b>Totals . . . . .</b>	<b>5,695</b>	<b>5,286</b>	<b>5,011</b>	<b>3,712</b>	<b>10,084</b>	<b>8,840</b>	<b>10,231</b>	<b>7,543</b>	<b>66,148</b>	<b>59,969</b>

**Wool. — (Thousand lb.).**

COUNTRIES	SEPTEMBER				TWO MONTHS (August 1-September 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	2,302	1,186	46	148	15,545	9,949	842	948	—	—
Hungary . . . . .	340	353	223	35	3,684	2,344	1,607	1,285	—	—
Argentina . . . . .	7,070	14,370	—	—	327,996	254,013	—	—	—	—
Chile . . . . .	774	1,219	—	—	16,413	8,007	—	—	—	—
India . . . . .	306	93	—	—	21,841	25,175	—	—	—	—
Yugoslavia . . . . .	3,799	3,025	168	536	50,559	35,076	7,452	5,020	—	—
Syria and Lebanon .	—	—	—	—	4,579	3,935	1,512	985	—	—
Algeria . . . . .	734	551	170	229	10,695	6,856	2,041	1,252	—	—
Egypt . . . . .	108	434	0	4	3,907	1,413	84	4	—	—
Un. of S. Africa . .	7,591	12,663	—	—	260,257	298,046	0	0	—	—
Australia . . . . .	531	527	—	—	6,429	5,296	853	1,261	—	—
New Zealand . . . .	74,358	66,478	672	13	860,134	762,756	4,253	2,008	—	—
— (a) . . . . .	7,128	7,516	0	0	76,842	58,535	42	15	—	—
— (b) . . . . .	4,041	1,085	—	—	221,642	177,836	0	2	—	—
— (c) . . . . .	362	4,112	—	—	65,299	45,519	9	29	—	—
<i>Importing Countries:</i>										
Germany . . . . .	148	514	11,387	10,179	3,763	9,780	314,369	241,275	—	—
Austria . . . . .	1,012	602	4,079	1,960	8,695	9,681	40,190	31,656	—	—
Belgium . . . . .	7	9	1,515	633	245	82	17,756	13,982	—	—
Denmark . . . . .	7,890	3,549	9,482	4,868	96,536	18,715	200,544	116,938	—	—
Spain . . . . .	2,559	1,967	520	373	22,902	22,465	4,244	3,036	—	—
Finland . . . . .	11	7	465	639	273	157	5,280	4,409	—	—
France . . . . .	419	172	1,098	1,517	2,571	2,524	11,435	10,172	—	—
Gr. Brit. and N. Irel.	0	15	525	399	79	86	4,072	2,762	—	—
Greece . . . . .	4,295	2,674	18,768	14,551	42,889	45,631	564,392	393,121	—	—
Italy . . . . .	16,078	11,784	25,799	33,748	425,553	315,628	964,435	888,010	—	—
Norway . . . . .	88	35	549	119	300	300	2,377	2,094	—	—
Netherlands . . . .	463	463	7,707	7,258	705	1,232	174,523	145,054	—	—
Poland . . . . .	190	86	1,586	1,373	4,830	1,620	16,010	14,290	—	—
Sweden . . . . .	298	262	467	311	3,280	1,933	8,640	7,229	—	—
Switzerland . . . .	88	97	937	915	1,243	761	8,662	8,148	—	—
Yugoslavia . . . .	229	106	2,077	1,709	1,424	1,687	38,649	27,084	—	—
Canada . . . . .	13	31	1,477	1,063	—	—	17,948	17,745	—	—
United States . . .	304	49	1,276	1,168	317	397	20,765	19,709	—	—
Japan . . . . .	18	22	3,552	1,473	1,870	1,870	32,909	32,038	—	—
Tunis . . . . .	3,058	547	302	302	161	152	4,023	2,937	—	—
— (a) . . . . .	46	154	1,539	346	6,775	5,159	10,730	6,277	—	—
— (b) . . . . .	13	13	21,303	1,554	459	3,904	122,591	82,779	—	—
— (c) . . . . .	40	4	2,535	686	88	77	221,678	192,901	—	—
<b>Totals . . . . .</b>	<b>146,546</b>	<b>136,779</b>	<b>118,872</b>	<b>90,512</b>	<b>2,572,220</b>	<b>2,139,325</b>	<b>2,828,554</b>	<b>2,279,330</b>	<b>—</b>	<b>—</b>

a) = Wool, greasy; b) = Wool, scoured. — x) 3) See notes page 824.



COUNTRIES	SEPTEMBER		THREE MONTHS (July 1-Sept. 30)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	SEPTEMBER		THREE MONTHS (July 1-Sept. 30)		TWELVE MONTHS (July 1- June 30)
	1933	1932	1933	1932	1932-33		1933	1932	1933	1932	1932-33
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.)</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	366,013	143,125	1,614,186	Ceylon . . . . .	14,564	17,522	44,939	57,706	241,791
India . . . . .	37	507	895	558	18,600	China . . . . .	...	...	27,348	16,607	84,962
Java and Madura .	6,063	18,966	18,065	45,030	79,858	India . . . . .	36,601	58,945	105,679	136,427	367,333
						Java and Madura .	7,531	8,913	21,268	30,949	157,807
						Japan . . . . .	5,278	4,537	11,861	11,707	29,736
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	9	79	49	474	1,310	Belgium . . . . .	0	0	0	4	9
Belgium . . . . .	11	44	46	181	410	Irish Free State .	2	0	7	7	31
France . . . . .	29	2	51	2	128	France . . . . .	2	2	4	4	15
Netherlands . . . .	1,186	1,788	2,829	4,072	16,261	Gr. Britain and N. Irel.	4,193	6,199	22,924	23,063	82,228
Portugal . . . . .	216	108	783	520	2,191	Netherlands . . . .	13	9	40	26	128
Switzerland . . . .	35	35	115	84	320	United States . . .	33	31	77	73	298
Canada . . . . .	4	2	13	9	51	Syria and Lebanon .	...	...	...	0	2
United States . . . .	1,590	600	6,005	3,036	13,100	Algeria . . . . .	2	2	9	7	35
Ceylon . . . . .	0	0	2	0	7	Union of S. Africa .	...	...	...	2	20
Syria and Lebanon .	...	...	...	...	11	Australia . . . . .	53	57	302	157	791
Australia . . . . .	0	4	7	7	46	New Zealand . . . .	...	...	...	...	104
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1,746,479</b>	<b>Totals . . . . .</b>	<b>68,272</b>	<b>96,217</b>	<b>234,460</b>	<b>276,741</b>	<b>965,290</b>
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	25,274	18,347	78,037	62,457	279,327	Germany . . . . .	842	820	2,434	2,238	10,102
Austria . . . . .	701	1,173	2,573	5,344	13,084	Austria . . . . .	57	66	119	309	875
Belgium . . . . .	9,506	12,178	27,501	28,969	96,356	Belgium . . . . .	44	46	112	123	597
Bulgaria . . . . .	57	11	196	77	919	Denmark . . . . .	115	106	251	245	1,265
Denmark . . . . .	4,581	3,287	13,946	7,269	49,022	Spain . . . . .	11	24	71	68	289
Spain . . . . .	4,795	2,983	12,511	9,894	43,385	Estonia . . . . .	7	7	18	11	71
Estonia . . . . .	20	20	66	22	101	Irish Free State .	2,425	1,682	5,781	4,998	22,836
Irish Free State . .	29	24	82	68	584	Finland . . . . .	29	15	64	44	223
Finland . . . . .	3,294	2,837	9,608	8,239	33,819	France . . . . .	284	238	1,265	670	3,199
France . . . . .	33,643	32,518	95,866	94,690	424,502	Gr. Britain and N. I.	46,033	59,853	115,505	149,364	572,897
Gr. Britain and N. I.	2,399	2,549	7,957	9,837	35,404	Ireland . . . . .	57	44	106	119	353
Ireland . . . . .	908	736	3,391	2,299	7,976	Greece . . . . .	35	66	68	143	547
Greece . . . . .	291	498	979	1,574	5,818	Hungary . . . . .	13	15	37	35	265
Hungary . . . . .	7,591	7,341	20,895	20,968	84,578	Latvia . . . . .	2	7	9	26	117
Italy . . . . .	13	18	29	49	324	Lithuania . . . . .	13	4	18	24	121
Latvia . . . . .	24	24	79	86	373	Norway . . . . .	37	33	93	97	381
Lithuania . . . . .	2,709	3,100	8,871	8,675	35,931	Netherlands . . . .	2,743	2,685	7,374	7,313	30,069
Norway . . . . .	19,074	10,970	42,911	24,141	97,738	Poland . . . . .	439	284	1,005	802	3,922
Netherlands . . . .	1,526	1,032	4,149	3,428	15,296	Portugal . . . . .	35	0	112	68	423
Poland . . . . .	972	417	2,736	1,942	10,986	Sweden . . . . .	93	79	207	179	875
Portugal . . . . .	7,465	8,949	19,963	23,056	99,449	Switzerland . . . .	163	152	381	404	2,097
Sweden . . . . .	2,579	2,264	7,434	7,432	37,168	Czechoslovakia . .	101	117	183	256	1,321
Switzerland . . . .	1,883	1,995	5,858	6,089	25,441	Yugoslavia . . . . .	40	77	88	117	419
Czechoslovakia . .	1,164	1,620	3,669	3,726	14,207	Canada . . . . .	2,280	2,057	7,194	5,384	38,480
Yugoslavia . . . . .	2,833	1,523	6,993	5,326	30,003	United States . . .	9,495	9,405	29,981	23,687	94,810
United States . . . .	110,071	103,510	373,140	271,337	1,458,438	Chile . . . . .	119	421	370	990	3,834
Chile . . . . .	540	1,215	717	1,889	3,979	Syria and Lebanon .	...	...	...	...	13
Ceylon . . . . .	366	187	1,634	578	2,513	Turkey . . . . .	7	154	196	911	2,339
Japan . . . . .	498	456	1,316	736	4,332	Algeria . . . . .	309	443	933	999	4,129
Syria and Lebanon .	...	...	...	...	2,218	Egypt . . . . .	1,422	1,713	4,248	5,194	16,290
Turkey . . . . .	408	553	2,939	4,486	10,677	Tunis . . . . .	152	214	461	734	2,654
Algeria . . . . .	2,597	2,141	7,414	7,443	30,189	Union of S. Africa .	...	...	...	...	11,605
Egypt . . . . .	1,973	1,484	5,695	4,524	16,193	Australia . . . . .	4,154	4,026	14,246	13,193	48,434
Tunis . . . . .	333	183	855	769	3,501	New Zealand . . . .	...	...	...	...	13,775
Un. of S. Africa . .	...	...	5,366	4,740	27,276						
Australia . . . . .	397	245	1,021	613	3,578						
New Zealand . . . .	...	...	...	...	362						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	66	0	110	110	China . . . . .	639	721	1,545	1,909	5,518
						India . . . . .	...	...	437	714	3,272
						Java and Madura .	...	...	...	...	...
<b>Totals . . . . .</b>	<b>250,514</b>	<b>226,454</b>	<b>776,867</b>	<b>633,113</b>	<b>3,005,549</b>	<b>Totals . . . . .</b>	<b>72,195</b>	<b>85,574</b>	<b>197,211</b>	<b>223,991</b>	<b>900,255</b>

1) See notes page 824

COUNTRIES	SEPTEMBER		TWELVE MONTHS (Oct. 1-Sept. 30)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	AUGUST		TWO MONTHS (August 1-Sept. 30)		TWELVE MONTHS (August 1-July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1933	1932	1932-33
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b> (Thousand centals).					
<b>EXPORTS.</b>						<b>a) NET EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Grenada . . . . .	75	503	9,054	9,656	—	Germany . . . . .	1,060	1,437	875	146	6)
Dominican Repub. . . . .	690	15	43,680	35,977	—	Bulgaria . . . . .	434	99	595	218	1,881
Brazil . . . . .	...	...	1) 209,028	178,438	—	Spain . . . . .	7	2	7	2	11
Ecuador . . . . .	882	1,087	22,496	35,689	—	Hungary . . . . .	2,610	800	3,693	1,276	4,405
Trinidad . . . . .	...	...	1) 48,927	36,899	—	Italy . . . . .	35	33	6)	6)	6)
Venezuela . . . . .	...	...	5) 16,976	10,748	—	Lithuania . . . . .	2	2	9	7	37
Ceylon . . . . .	269	185	8,250	9,266	—	Poland . . . . .	6)	6)	7	4	685
Java and Madura . . . . .	326	478	2,864	3,300	—	Rumania . . . . .	0	9	7	31	31
Cameroon . . . . .	1,799	1,640	37,424	27,315	—	U. S. S. R. . . . .	8) 3,682	8) 2,851	8) 9) 4,881	8) 9) 2,008	2) 8) 9,489
Ivory Coast . . . . .	4,198	1,572	69,657	54,578	—	Yugoslavia . . . . .	77	82	119	212	580
Gold Coast . . . . .	18,424	18,197	561,127	462,878	—	Canada . . . . .	11,023	17,126	19,652	28,958	156,745
Nigeria . . . . .	3,527	2,037	153,363	123,929	—	United States . . . . .	236	2,105	604	5,102	17,077
St. Thomas and Prince Is. . . . .	...	...	4) 11,039	4) 13,360	—	Argentina . . . . .	4,259	2,066	14,154	4,427	78,487
Togoland . . . . .	1,001	218	16,312	13,916	—	Chile . . . . .	6)	6)	6)	9	6)
<i>Importing Countries:</i>						India . . . . .	40	75	68	132	6)
Germany . . . . .	0	0	123	496	—	Japan . . . . .	2	6)	6)	6)	6)
Belgium . . . . .	0	194	474	1,508	—	Syria and Lebanon . . . . .	6)	40	6)	29	6)
France . . . . .	0	2	66	4	—	Turkey . . . . .	37	7	134	9	260
Netherlands . . . . .	439	756	3,962	6,740	—	Algeria . . . . .	690	690	1,505	2,044	5,022
United States . . . . .	260	593	9,416	7,011	—	French Morocco . . . . .	...	...	1) 448	1) 2	3,380
Australia . . . . .	112	2	403	143	—	Tunis . . . . .	68	472	282	1,195	3,201
Totals . . . . .	32,002	27,479	1,224,641	1,031,851	—	Australia . . . . .	4,288	4,253	9,072	6,504	88,935
<b>IMPORTS.</b>						Totals . . . . .	28,550	32,149	56,108	52,315	370,224
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	13,428	10,946	172,098	175,744	—	Germany . . . . .	7)	7)	7)	7)	3,012
Austria . . . . .	520	906	7,564	13,651	—	Austria . . . . .	216	454	741	862	7,948
Belgium . . . . .	644	633	15,296	21,588	—	Belgium . . . . .	1,530	1,563	3,863	3,325	23,559
Bulgaria . . . . .	0	73	608	1,323	—	Denmark . . . . .	1,003	758	1,823	1,389	7,220
Denmark . . . . .	229	159	8,234	7,756	—	Spain . . . . .	7)	7)	7)	7)	7)
Spain . . . . .	1,221	983	23,127	19,921	—	Estonia . . . . .	0	0	0	0	0
Estonia . . . . .	33	4	410	452	—	Irish Free State . . . . .	1,030	999	2,264	2,006	10,726
Irish Free State . . . . .	93	86	3,071	1,149	—	Finland . . . . .	194	223	483	456	2,573
Finland . . . . .	15	26	187	181	—	France . . . . .	401	2,198	1,373	8,620	19,679
France . . . . .	5,273	6,358	93,300	91,201	—	Gr. Brit. and N. Irel. . . . .	12,633	9,583	22,840	20,214	129,134
Gr. Brit. and N. Irel. . . . .	8,212	10,450	148,744	138,407	—	Greece . . . . .	840	926	1,649	1,951	11,819
Greece . . . . .	117	183	2,216	2,844	—	Italy . . . . .	7)	7)	313	0	6,654
Hungary . . . . .	511	370	6,294	5,573	—	Latvia . . . . .	0	2	0	13	15
Italy . . . . .	1,585	1,444	17,104	15,053	—	Norway . . . . .	381	417	754	653	5,060
Latvia . . . . .	110	75	1,219	1,607	—	Netherlands . . . . .	2,595	1,089	4,198	2,430	16,319
Lithuania . . . . .	33	49	686	617	—	Poland . . . . .	15	24	7)	7)	7)
Norway . . . . .	90	134	3,704	5,033	—	Portugal . . . . .	37	86	86	227	796
Netherlands . . . . .	5,143	6,654	102,081	92,202	—	Sweden . . . . .	134	258	231	774	1,938
Poland . . . . .	1,418	853	15,432	11,444	—	Switzerland . . . . .	8) 1,343	8) 988	8) 2,269	8) 2,072	8) 11,457
Portugal . . . . .	249	44	1,116	855	—	Czechoslovakia . . . . .	0	170	90	203	7,165
Sweden . . . . .	534	434	8,962	10,922	—	Total Europe . . . . .	22,352	19,738	42,977	45,195	265,074
Switzerland . . . . .	516	309	16,771	11,197	—	Chile . . . . .	179	0	375	7)	1,477
Czechoslovakia . . . . .	1,631	1,958	18,144	21,526	—	Ceylon . . . . .	46	35	82	77	518
Yugoslavia . . . . .	168	172	1,332	1,501	—	China . . . . .	161	750	1,393	1,550	32,955
Canada . . . . .	1,157	1,144	20,122	16,444	—	India . . . . .	7)	7)	7)	7)	564
United States . . . . .	49,406	45,276	535,613	420,295	—	Indo-China . . . . .	42	31	71	77	456
Japan . . . . .	141	73	2,114	1,960	—	Japan . . . . .	7)	112	2,901	90	3,563
Australia . . . . .	450	1,243	10,454	11,252	—	Java and Madura . . . . .	0	0	141	106	1,276
New Zealand . . . . .	...	...	3) 2,167	3) 1,362	—	Syria and Lebanon . . . . .	57	7)	99	7)	913
Totals . . . . .	92,927	91,039	1,238,170	1,103,060	—	Egypt . . . . .	18	97	24	121	267
						Union of S. Africa . . . . .	...	...	2)	2)	60
						New Zealand . . . . .	...	...	...	...	653
						Totals . . . . .	22,855	20,763	48,065	47,276	307,884

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 August. — 2) Data up to 30 June. — 3) Data up to 31 July. — 4) Data up to 30 April. — 5) Data up to 31 March.

— 6) See Net Imports. — 7) See Net Exports. — 8) Wheat only. — 9) Three Months: July 1-September 30.

## STOCKS

WHEAT AND WHEAT-FLOUR STOCKS HELD BY COMMERCIAL MILLS IN THE UNITED STATES 1).

Specification and situation	Last day of month					Last day of month				
	Sept. 1933	June 1933	March 1933	Sept. 1932	Sept. 1931	Sept. 1933	June 1933	March 1933	Sept. 1932	Sept. 1931
	1,000 centals					1,000 bushels or barrels				
Wheat stocks the property of commercial millers:										
Wheat in transit to merchant mills and bought to arrive . . . . .	8,094	9,046	6,278	8,879	8,995	13,490	15,076	10,464	14,798	14,991
Wheat held by mills and mill elevators attached to mills . . . . .	68,227	54,676	49,915	65,613	57,952	113,712	91,126	83,192	109,355	96,586
Wheat in other positions 2) . . . . .	28,009	15,391	13,952	17,930	16,455	46,682	25,652	23,254	29,884	27,425
TOTAL . . . . .	104,330	79,113	70,145	92,422	83,402	173,884	131,854	116,910	154,037	139,002
Wheat-flour in mills and warehouses, and in transit, sold and unsold . . . . .	7,497	5,866	7,286	8,320	6,923	3,825	2,993	3,718	4,245	3,532
Wheat stored for others in mills and mill elevators . . . . .	7,126	5,701	6,154	5,914	12,858	11,876	9,502	10,257	9,857	21,430
GRAND TOTAL 3) . . . . .	122,242	93,254	86,784	110,307	106,220	203,737	155,423	144,642	183,845	177,032

1) Partial census, including mills accounting for over 90 % of the total capacity of all commercial mills; this table replaces the incomplete one, published under the same title in preceding numbers of this Crop Report. — 2) These stocks are included in the total quantities in country elevators (information published as of 1 April and 1 July) or in the total quantities in public terminal elevators and private terminal elevators not attached to mills (monthly information on commercial cereals in store). — 3) Including flour in terms of grain.

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Canadian in Canada . . . . .	149,405	136,509	119,371	143,661	91,718	249,008	227,515	198,952	239,435	152,863
U. S. in Canada . . . . .	1,634	1,868	2,203	4,574	18,976	2,724	3,114	3,672	7,623	31,627
U. S. in the United States . . . . .	91,957	93,991	91,043	115,128	146,432	153,262	156,652	151,738	191,880	244,054
Canad. in the United States . . . . .	5,179	3,451	2,871	8,350	7,558	8,631	5,752	4,785	13,916	12,596
Total . . . . .	248,175	235,819	215,488	271,713	264,684	413,625	393,033	359,147	452,854	441,140
RYE:										
Canadian in Canada . . . . .	2,821	2,763	3,060	2,943	7,292	5,037	4,934	5,464	5,256	13,021
U. S. in Canada . . . . .	0	0	0	55	460	0	0	0	99	821
U. S. in the United States . . . . .	7,368	7,262	6,719	4,752	5,811	13,158	12,968	11,998	8,485	10,377
Canad. in the United States . . . . .	324	146	158	281	217	578	260	283	502	388
Total . . . . .	10,513	10,171	9,937	8,031	13,780	18,773	18,162	17,745	14,342	24,607
BARLEY:										
Canadian in Canada . . . . .	5,766	5,126	4,280	2,820	5,410	12,013	10,679	8,917	5,874	11,270
U. S. in Canada . . . . .	0	0	0	55	12	0	0	0	114	24
U. S. in the United States . . . . .	9,911	9,278	8,628	4,503	3,539	20,647	19,330	17,975	8,381	7,373
Canad. in the United States . . . . .	0	0	0	22	2	0	0	0	46	4
Total . . . . .	15,677	14,404	12,908	7,400	8,963	32,660	30,009	26,892	15,415	18,671
OATS: (1)										
Canadian in Canada . . . . .	6,475	5,415	4,590	2,828	6,734	20,234	16,921	14,345	8,836	21,044
U. S. in Canada . . . . .	316	330	312	478	78	987	1,030	975	1,495	244
U. S. in the United States . . . . .	15,958	16,271	14,782	9,307	5,820	49,870	50,846	46,193	29,084	18,189
Canad. in the United States . . . . .	0	0	0	0	13	0	0	0	0	41
Total . . . . .	22,749	22,016	19,684	12,613	12,645	71,091	68,797	61,513	39,415	39,518
MAIZE:										
U. S. in Canada . . . . .	5,728	4,316	3,963	1,962	640	10,228	7,707	7,076	3,503	1,143
Of other origin in Canada . . . . .	736	267	323	208	865	1,314	477	576	371	1,544
U. S. in the United States . . . . .	34,359	33,483	32,348	15,468	4,111	61,355	59,791	57,764	27,621	7,341
Total . . . . .	40,823	38,066	36,634	17,638	5,616	72,897	67,975	65,416	31,495	10,028

1) For oats the bushel is of 32 lb.

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of grain) . . .	17,218	20,722	20,818	19,128	22,093	28,696	34,536	34,696	31,880	38,488
Rye . . . . .	413	120	782	326	922	737	214	1,397	583	1,646
Barley . . . . .	4,036	2,812	2,112	2,652	4,088	8,408	5,858	4,808	5,525	8,517
Oats . . . . .	1,066	291	666	976	1,178	3,330	910	2,080	3,050	3,680
Maize . . . . .	9,610	14,122	16,150	12,547	26,515	17,160	25,217	19,911	22,406	47,349

Authority: *Broomhall's Corn Trade News*.

## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks: total production				% Quantities intended for sale: total production				% Stocks in elevators: total production 1)	
	15 Oct. 1933	15 Sept. 1933	15 Oct. 1932	15 Oct. 1931	15 Oct. 1933	15 Sept. 1933	15 Oct. 1932	15 Oct. 1931	15 Oct. 1933	15 Oct. 1932
Winter wheat . . .	68.9	85.5	67.2	60.2	58.4	71.6	57.1	47.8	5.5	6.5
Spring wheat . . .	87.6	94.5	82.4	80.9	73.8	82.1	70.2	68.3	4.2	6.7
Winter rye . . . .	68.3	84.5	68.3	60.7	39.0	50.1	39.4	27.4	2.8	3.8
Winter barley . . .	50.1	64.8	41.3	41.5	11.1	17.4	7.5	7.0	2.2	0.7
Spring barley . . .	74.5	86.9	73.2	79.6	48.3	58.5	45.7	53.0	0.8	0.5
Oats . . . . .	87.8	94.9	86.7	86.6	17.6	20.2	21.1	20.1	0.2	0.3
Early potatoes . . .	27.2	43.6	80.6	80.0	10.7	21.4	30.1	28.3	0.0	0.1
Late potatoes . . .	81.3	98.0			25.9	39.4				

1) These stocks are the property of farmers but are not on the farms; as they are partly in commercial elevators certain quantities are reckoned twice, the report on stocks in elevators not making any distinction of ownership.

Authority: *Presberichtsstelle beim Deutschen Landwirtschaftsrat*.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	21,722	19,828	13,426	14,928	36,203	33,047	22,377	24,879
Flour for bread . . . .	2,967	2,670	2,416	2,811	1,514	1,362	1,233	1,434
TOTAL 2) . . . .	25,679	23,388	16,647	18,675	42,797	38,979	27,747	31,125
RYE:								
Grain . . . . .	17,725	17,732	14,674	11,976	31,652	31,664	26,204	21,385
Flour for bread . . . .	1,775	1,572	1,270	1,664	905	802	648	849
TOTAL 2) . . . .	20,091	19,829	16,367	14,196	35,875	35,407	29,228	25,349
BARLEY								
Oats . . . . .	4,720	4,105	3,743	3,578	9,834	8,552	7,799	7,455
	1,662	1,437	946	1,614	5,195	4,492	2,956	5,043

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye)

GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First day of the month					First day of the month				
	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	9,048	7,200	5,640	4,776	16,416	15,080	12,000	9,400	7,960	27,360
Flour as grain . .	1,008	720	504	528	960	1,680	1,200	840	880	1,600
TOTAL . . . . .	10,056	7,920	6,144	5,304	17,376	16,760	13,200	10,240	8,840	28,960
Barley . . . . .	1,340	900	580	760	1,140	2,762	1,875	1,208	1,583	2,375
Oats . . . . .	352	400	464	368	672	1,100	1,250	1,450	1,150	2,100
Maize . . . . .	2,760	3,528	3,312	3,936	2,784	4,929	6,300	5,914	7,029	4,971

1) Imported cereals.

Authority: Broomhall's Corn Trade News.

STOCKS OF COTTON IN EUROPE 1).

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931
	1,000 centals					1,000 bales (1 bale = 478 lb.)				
Great Britain:										
American . . . .	2,095	2,163	2,175	1,686	1,159	438	452	455	353	242
Argentine, Brazil- ian, etc. . . . .	186	184	151	223	210	39	38	32	47	44
Peruvian, etc. . .	463	400	344	413	347	97	84	72	86	73
East Indian, etc.	255	300	307	194	502	53	63	64	40	105
Egyptian, Sudan- ese . . . . .	820	884	963	1,013	852	171	185	201	212	178
Other 2) . . . . .	194	215	235	87	191	41	45	49	18	40
TOTAL . . . . .	4,013	4,146	4,175	3,616	3,261	839	867	873	756	682
Bremen:										
American . . . .	2,140	1,967	2,075	1,842	809	448	412	434	385	169
Other . . . . .	100	121	128	66	55	21	25	27	14	12
TOTAL . . . . .	2,240	2,088	2,203	1,908	864	469	437	461	399	181
Le Havre:										
American . . . .	919	786	762	936	815	192	165	159	196	170
Other . . . . .	75	58	55	48	134	16	12	12	10	28
TOTAL . . . . .	994	844	817	984	949	208	177	171	206	198
Total Continent 3):										
American . . . .	3,988	3,361	3,550	3,395	1,939	834	703	743	710	406
Argentine, Brazil- ian, etc. . . . .	59	60	51	62	102	13	13	11	13	21
E. Indian, Austral- ian, etc. . . . .	174	177	198	70	163	36	37	42	15	34
Egyptian . . . .	129	102	112	120	115	27	22	23	25	24
W. Indian, W. Afri- can, E. African, etc. . . . .	44	36	35	36	35	9	7	7	7	7
TOTAL . . . . .	4,394	3,736	3,946	3,354	2,354	919	782	826	770	492

1) Revised data. — 2) Includes: W. Indian, etc., E. African, etc., W. African, and Australian. — 3) Includes Bremen, Le Havre, and other Continental ports.

Authority: Liverpool Cotton Ass.

## STOCKS OF COTTON ON HAND IN THE UNITED STATES.

LOCATION	Last day of the month					Last day of the month				
	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931	Oct. 1933	Sept. 1933	Aug. 1933	Oct. 1932	Oct. 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . . .	6,690	5,706	5,701	6,226	5,481	1,361	1,161	1,160	1,267	1,116
In public storage and at compresses . . .	46,609	36,281	28,463	48,343	46,490	9,474	7,375	5,786	9,827	9,450
TOTAL . . .	53,299	41,987	34,164	54,569	51,971	10,835	8,536	6,946	11,094	10,566

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932	Nov. 1931
	1,000 centals					1,000 bales (1 bale = 478 lb)				
Bombay 1) . . . .	2,091	2,559	2,876	2,200	1,772	437	535	602	460	371
Alexandria . . . .	2,633	1,788	1,706	3,861	4,807	551	374	357	808	1,006

1) Stocks held by exporters, dealers and mills.

Authorities: East Indian Cotton Ass. and Commission de la Bourse de Minet-el-Bassal.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

On pages 832 to 834 the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

In addition to the original data summary table are given below.

## Percentage variations in the index-numbers for October, 1933.

COUNTRIES	compared with those for September, 1933		compared with those for October, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 3.1	+ 0.8	+ 5.3	+ 1.5
England and Wales . . . . .	0.0	...	+ 7.0	...
Argentina . . . . .	- 7.2	...	- 8.0	...
Canada . . . . .	- 6.0	- 1.5	+ 14.5	+ 4.5
United States . . . . .	0.0	-	+ 25.0	-
Finland . . . . .	- 2.3	+ 0.6	+ 18.8	+ 10.5
Hungary . . . . .	0.0	0.0	+ 2.8	0.0
Italy . . . . .	+ 1.9	+ 1.4	- 28.0	- 11.3
New Zealand . . . . .	- 0.8	- 1.3	- 16.6	- 9.0
Netherlands . . . . .	+ 5.6	-	+ 10.9	-
Poland . . . . .	0.0	...	+ 5.8	...
Yugoslavia . . . . .	- 2.0	- 1.1	- 6.6	- 7.5
	+ 4.0	+ 1.3	+ 14.1	-
	- 1.2		- 1.7	- 3.8

a) Bureau of Agricultural Economics. — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise stated, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	27	AVERAGE 1)					
	Nov.	Nov.	Nov.	Oct.	Oct.	Nov.	Nov.	Commercial		
	1933	1933	1933	1933	1933	1932	1931	1932-33	1931-32	
WHEAT										
Budapest: Tisza region (78 kg. hl.; pengő p. quintal) . . . . .	7.37	7.70	7.75	7.75	7.68	12.94	11.83	13.73	12.22	
Braila: Good quality (lei p. quintal) . . . . .	n.330	n.350	330	340	341	630	307	n. 535	305	
Winnipeg: No. 1 Manitoba (cents p. 60 lb.) . . . . .	64 3/4	64 3/4	64 1/4	64 1/4	60 1/2	46 1/2	66	54 1/4	59 3/4	
Chicago: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	91	90 1/4	87 1/2	86 3/4	84	n. 45 1/2	61 3/8	59 1/4	54 3/4	
Minneapolis: No. 1 Northern (cent p. 60 lb.) . . . . .	89 7/8	88 5/8	86 3/8	88 1/8	83 1/2	48	75 1/4	60 5/8	66 7/8	
New-York: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	99 7/8	99 1/4	96	98 1/8	92 7/8	53 7/8	71 1/4	68 3/8	66 7/8	
Buenos Aires b): Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.35	5.52 1/2	5.50	5.47 1/2	5.40	6.12	7.49	6.09	6.68	
Karachi: Karachi white, 2% barley, 1 1/2% dirt (rupees p. 65 lb.) . . . . .	22-15-0	23-13-0	22-10-0	22-8-0	21-15-9	28-0-0	22-8-0	28-4-2	21-15-6	
Berlin: Home grown (parity Brandenburg stations; Rm. p. quint.) 2) . . . . .	n. 18.50	n. 18.50	n. 18.50	n. 18.40	n. 18.40	19.72	22.55	19.60	23.63	
Hamburg c. i. f. (Rm. p. quint.): . . . . .										
No. 2 Manitoba . . . . .	7.78	7.52	7.40	7.50	7.35	8.24	11.43	8.83	10.38	
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11.03	n. q.	n. 9.32	
Barusso (3) . . . . .	6.81	6.76	6.72	6.60	6.54	7.59	9.67	7.76	8.78	
Antwerp (francs p. quintal): . . . . .										
Home grown . . . . .	60.00	59.00	58.00	57.00	58.25	78.25	n. q.	79.70	83.10	
No. 1 Harl Winter, Gulf . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	76.00	94.75	77.70	81.75	
Paris: Home-grown (75-77 kg.; delivery regional depots; frs. p. quintal) 4) . . . . .	n.122.00	n.122.00	n.122.00	n.121.00	121.00	112.80	161.50	107.35	167.10	
London: Home grown (sh. p. 504 lb.) 5) . . . . .	20/-	20/-	20/-	20/-	20/4 1/2	24/-	30/3	24/8 1/2	26/5	
London and Liverpool, c. i. f., parcels, shipping current month (sh. p. 480 lb.): . . . . .										
German (on sample) . . . . .	16/11 1/2	16/11 1/2	16/3	15/6	16/-	23/11 1/2	27/3	n. 23/8	n. 21/3	
South Russian (on sample) . . . . .	18/-	18/3	17/9	17/6	18/5 1/2	n. q.	27/2	n. 26/3	22/3	
No. 1 Manitoba . . . . .	24/7 1/2	24/7 1/2	25/1 1/2	24/7 1/2	24/3	25/7 1/2	32/9	26/4	28/10	
No. 3 Manitoba . . . . .	23/-	23/1 1/2	23/4 1/2	23/6	22/8 1/2	25/0 1/2	29/1	25/3	25/9	
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	27/11	n. q.	25/3	
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	34/2	n. q.	26/5	
Rosaft (afloat) 6) . . . . .	19/3	19/3	19/9	19/1 1/2	18/11	23/7	26/10	23/2	23/8	
Austrian . . . . .	23/3	23/3	23/9	22/9	22/1	26/-	29/7	25/7	25/9	
Milan (a): Home-grown, soft, "Buono mercantile," (76-78 kg p. hl.; lire p. quint.) . . . . .	80.00	79.00	79.50	79.50	81.25	109.50	100.00	101.80	106.20	
Genoa c. i. f. (U. S. 8 p. quint.): . . . . .										
No. 2 Manitoba . . . . .	3.01	2.91	2.89	2.83	2.75	1.99	2.71	2.23	2.42	
No. 2 Canadian Durum . . . . .	3.08	2.94	2.85	2.73	2.68	2.27	3.47	2.41	3.15	
Plata 7) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	1.80	n. q.	1.83	2.15	
RYE										
Budapest: Home-grown (pengő p. quintal) . . . . .	3.90	4.00	4.05	4.05	4.17	6.77	12.14	6.77	12.24	
Berlin: Home-grown (parity Brandenburg stations; Rm. p. quint.) 2) . . . . .	n. 15.00	n. 15.00	n. 15.00	n. 14.90	n. 14.90	15.62	19.77	15.52	19.00	
Hamburg, c. i. f. (Rm. p. quint.): . . . . .										
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	6.12	n. q.	n. 6.40	n. 9.50	
Plata (74-75 kg. p. hl.) 8) . . . . .	4.78	4.69	4.69	4.75	4.85	6.40	9.32	5.98	8.36	
Minneapolis: No. 2 (cents p. 56 lb.) . . . . .	63	63	60 1/2	65	60 1/2	30 3/4	50 3/4	41 3/4	42 1/2	
Groningen (c): Home-grown (fl. p. quint.) . . . . .	6.45	6.50	6.50	n. q.	6.98	3.83	5.24	3.92	5.13	
BARLEY										
Braila: Average quality (lei p. quintal) . . . . .	137	126	120	115	114	202	287	186	263	
Winnipeg: No. 4 Western (cents p. 48 lb.) . . . . .	33 3/8	34 3/8	32 1/2	33 3/8	30 3/8	28 1/8	40 3/8	29 3/4	34 1/8	
Chicago: Feeding (cents p. 48 lb.) . . . . .	48	52	41	53	46 1/2	30 1/2	44 3/4	33 3/4	43 3/4	
Minneapolis: Feeding (cents p. 48 lb.) . . . . .	39	41	37	39	41	23 3/4	41 7/8	27 1/8	38 3/4	
Berlin: Home-grown fodder (parity Brandenburg stations; Rm. p. q.) 9) . . . . .	16.65	16.55	16.25	16.25	16.22	16.50	16.61	16.55	16.41	
Antwerp: Danubian (francs p. quint.) . . . . .	47.00	47.00	46.00	38.50	38.75	56.00	81.50	55.50	77.25	
London: English malting (sh. p. 448 lb.) 5) . . . . .	40/-	42/6	42/6	42/6	44/4 1/2	40/-	42/-	35/-	39/4	
London and Liverpool, c. i. f., parcels (shillings per 400 lb.): . . . . .										
Danubian 3% . . . . .	12/9	12/7 1/2	12/3	12/3	12/3 3/4	18/6	23/1	n. 16/7	n. q.	
Russian (Azoff-Black sea) . . . . .	12/7 1/2	13/-	12/3	12/3	12/4 1/2	n. q.	22/1	n. 16/5	18/11	
Canadian Western, N. 3 . . . . .	15/7 1/2	15/10 1/2	15/10 1/2	16/-	15/7 1/2	19/6	24/-	18/3	20/11	
Californian malting (sh. p. 448 lb.) . . . . .	n. q.	26/3	26/3	26/3	26/3	23/3	39/6	22/8	33/4	
Groningen (c): Home grown winter (fl. p. q.) . . . . .	3.55	3.60	3.70	3.60	4.56	4.85	6.16	4.40	5.87	

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From 1 Oct. 1933: minimum price at the farm (fixed according to the law of 26 Sept.) increased with transport costs from farm to station. — 3) August 1931-Jan. 1932: 79 kg p. hl., Feb.-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From 15 July 1933: minimum prices at the farm (fixed according to the law of 10 July) increased with transport costs from farm to Paris stations. — 5) From August: prices at the farm. — 6) August-Nov. 1931: 63 lb. p. bushel Dec. 1931: 63 1/2 lb. Jan.-Dec. 1932: 64 lb.; Jan.-Oct. 1933: 63 1/2 lb.; — afterwards: 63 lb. — 7) Revised series. — 8) From November 1932: 72-73 kg. p. hl. — 9) From 1 Sept. 1933: spring barley, average quality. — 10) Shipping Jan.-Febr. — 11) Revised prices (prices at Paris stations): Oct.: 121.00; Sept.: 120.00; 15 July-end Aug.: 119.00; average July: 113.80. — 12) On sample. — 13) Shipping Dec.-Jan. — 14) Price of preceding Wednesday.

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	27	AVERAGE 1)					Commercial Season	
	Nov.	Nov.	Nov.	Oct.	Oct.	Nov.	Nov.	Nov.			
	1933	1933	1933	1933	1933	1932	1931				
									1932-33	1931-32	
OATS.											
Braila: Good quality (lei p. quintal) . . . . .	125	n. q.	120	n. 120	n. 128	192	322	n. 195	285		
Winnipeg: No. 2 White (cents per 34 lb.) . . . . .	30	30 7/8	30 3/4	31 3/4	29 1/2	24	32 7/8	26 1/2	31 3/8		
Chicago: No. 2 White (cents per 32 lb.) . . . . .	36	37 1/4	35	36 1/4	32 3/4	17	27 1/8	21 9/8	24 1/8		
Buenos Aires a): Current quality (pesos paper p. quintal) . . . . .	3.60	3.55	3.55	3.55	3.59	4.40	6.37	4.43	5.33		
Berlin: Home grown (parity of Branden- burg stations; Rm. p. quint.) . . . . .	14.55	14.60	14.05	14.00	14.10	13.17	14.92	13.05	15.10		
Paris: Home grown, black and other (de- livery regional depots; frs. p. quintal) . . . . .	47.60	48.50	49.85	48.50	49.65	87.25	92.35	76.30	101.75		
London: Home grown white (sh. p. 336 lb.) 2)	17/-	17/-	17/-	17/-	17/-	18/9	21/3	18/6	21/3		
London and Liverpool c. i. f., parcels (shillings p. 320 lb.):											
German (on sample) . . . . .	12/9	12/9	12/9	12/9	12/9 3/4	n. q.	n. q.	n. q.	n. q.		
Danubian (39-40 lb. p. bush.) 3) . . . . .	10/-	10/3	10/3	10/3	10/4 1/2	14/-	n. q.	n. 14/3	n. q.		
Plata (f. a. q.) . . . . .	11/1 1/2	11/1 1/2	11/3	11/1 1/2	11/4 1/2	13/6	17/5	12/9	14/5		
Chilian Tawny . . . . .	10/3	10/3	10/-	10/-	10/4 1/2	n. q.	19/6	n. q.	16/-		
Milan (b), (lire p. quintal):											
Home grown . . . . .	48.00	48.00	5) 50.00	5) 50.00	50.00	67.50	73.50	62.80	73.60		
Foreign imported . . . . .	47.50	47.50	5) 47.50	5) 47.50	47.50	62.60	69.00	57.10	65.20		
MAIZE.											
Braila: Danubian (lei p. quintal) . . . . .	200	200	202	192	169	61	163	162	186		
Chicago: No. 2 Mixed Amer. (cents p. 56 lb.) . . . . .	49	47 3/4	41 1/2	45	40	26 1/2	43 3/4	37 3/8	34		
Buenos Aires (a): Yellow Plata (pesos paper p. quintal) . . . . .	3.65	3.67 1/2	3.57 1/2	3.52 1/2	3.49	4.26	4.82	4.00	4.63		
Antwerp, (francs p. quintal):											
Bessarabian . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 49.05	n. q.		
Yellow Plate . . . . .	48.00	46.50	45.50	43.00	43.00	52.25	61.75	49.50	57.20		
Argentine Cinqantino . . . . .	59.00	56.50	54.00	50.00	48.35	61.75	67.00	64.90	63.30		
London and Liverpool, parcels, c. i. f. (shillings p. 480 lb.):											
Danubian . . . . .	17/4 1/2	17/6	17/9	18/-	17/10 3/4	18/4	19/9	16/11 3/4	n. 19/3		
Yellow Russian . . . . .	16/6	16/6	16/3	15/10 1/2	15/6	18/-	n. q.	n. 16/8	n. q.		
White Russian . . . . .	18/-	18/3	17/9	17/-	17/7	18/1 1/2	n. q.	n. 17/6	n. q.		
Yellow Plata . . . . .	16/7 1/2	16/9	16/4 1/2	15/4 1/2	14/11 1/4	17/10	17/4	16/10	18/2		
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	18/7	21/8	n. 28/2	n. 20/11		
Milan (b) Home grown (lire p. quintal) . . . . .	44.00	43.00	5) 43.00	5) 43.00	44.00	57.25	61.25	51.65	68.70		
RICE (MILLED).											
Milan (b), lire p. quintal):											
Vialone, oil . . . . .	177.50	172.50	5) 172.50	5) 172.50	174.25	180.75	171.25	181.15	145.90		
Maratelli, oil . . . . .	131.50	127.50	5) 126.00	5) 124.00	122.00	143.50	139.25	151.25	117.35		
Originario, white . . . . .	86.00	85.50	5) 84.00	5) 84.00	83.75	108.35	117.00	121.40	103.20		
Rangoon: No. 2 Burma (rupees p. 7500 lb.) . . . . .	212 1/2	197 1/2	187 1/2	192 1/2	185	229	266	268 3/8	249 1/4		
Saigon (Indo-chinese piastres p. quintal):											
No. 1 Round white (25 % broken) . . . . .	...	...	...	3.41	3.69	4.22	6.60	5.48	6.73		
No. 2 Japan (40 % broken) . . . . .	...	...	...	3.16	3.50	4.06	6.14	5.11	6.20		
London (a), c. i. f. (shillings p. 112 lb.):											
No. 3 Spanish Belloch, oil . . . . .	13/6	13/6	13/6	13/6	13/6	14/-	12/9	13/8	11/11		
No. 6 Italian good, oil . . . . .	8/10 1/2	8/10 1/2	8/10 1/2	9/1 1/2	9/4 1/2	n. 12/9	n. q.	14/-	13/7		
American Blue Rose . . . . .	16/3	17/9	18/7 1/2	19/-	19/6	16/5	20/4	17/1	18/7		
No. 2 Rangoon or Bassein (Burma) . . . . .	20) 6/6	6/7 1/2	6/6	6/4 1/2	6/3 3/4	7/3	8/6	8/4	7/11		
No. 1 Saigon . . . . .	5) 5/9	5/10 1/2	6/-	6/4 1/2	6/8 3/4	7/4	9/6	8/5	8/1		
Siam special 4) . . . . .	10) 7/11 1/2	7/4 1/2	7/6	6/7 1/2	7/10 1/2	8/4	n. 11/3	9/4 1/2	9/5		
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	22.50	22.80	n. q.	20.90	20.72	19.17	17.55	21.20	18.46		
LINSEED.											
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	9.90	10.00	10.10	10.00	9.91	8.98	11.00	9.22	10.82		
Antwerp: Plate (francs p. quintal) . . . . .	109.50	110.00	109.50	108.00	108.25	100.95	129.75	103.25	146.00		
London, c. i. f. (£ p. long ton):											
Plata (delivery Hull) . . . . .	9-10-0	9-15-0	10-0-0	9-17-6	9-16-10	8-15-0	9-10-0	8-8-4	8-14-1		
Bombay bold . . . . .	11-6-3	11-7-6	11-13-9	11-3-9	11-1-3	11-11-10	11-16-0	11-10-0	11-9-6		
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.) . . . . .	173	176	179 1/4	178	174 1/4	105 1/8	141 1/8	118 1/4	148		

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From August: prices paid at the farm. — 3) From 18 Aug. 1933: 35-36 lb. p. bush.; 5 1/8 dirt. — 4) Before January 1932: No. 1 Garden Siam. — 5) Price of preceding Wednesday. — 6) Shipping Dec.-Jan. — 7) Shipping Nov.-Dec. — 8) 20 Oct.: 3.62; 13 Oct.: 3.82; 6 Oct.: 3.90. — 9) 20 Oct.: 3.46; 13 Oct.: 3.66; 6 Oct.: 3.74. — 10) New crop; shipping Jan.-Febr. — 11) New crop; shipping Febr.-March. — 12) Siam super. — 13) Dec. delivery.



PRODUCTS, MARKETS AND DESCRIPTION	17 Nov. 1933	10 Nov. 1933	3 Nov. 1933	27 Oct. 1933	AVERAGE 1)					Commercial Season	
					Oct. 1933	Nov. 1932	Nov. 1931	1932-33	1931-32		
COTTONSEED.											
Alexandria: Sakellaridis (piastres p. ardeb)	35.1	35.9	37.8	34.7	36.2	64.1	62.8			60.7	60.0
London: Sakellaridis (delivery Hull; £ p. long ton). . . . .	4-3	4-2-6	4-6-3	4-0-0	4-2-6	6-14-8	6-10-7			6-4-5	6-3-6
COTTON.											
New Orleans: Middling (cents p. lb.) . .	9.94	9.75	9.52	9.57	9.22	6.16	6.28			7.27	6.20
New York: Middling (cents p. lb.) . . .	10.20	10.05	9.80	9.85	9.52	6.29	6.41			7.38	6.35
Bombay: M. g. Broach f. g. (rupees p. 784 lb.)	183	185	189	189	189 3/4	210	186			201 13/16	181 1/2
Alexandria (talaris p. kantar):											
Sakellaridis f. g. f. . . . .	12.65	12.40	12.65	12.35	12.49	13.92	13.17			14.15	12.10
Ashmuni-Zagora f. g. f. . . . .	9.75	10.00	10.45	10.47	10.56	12.77	9.59			12.46	9.69
Bremen: Middling (U. S. cents p. lb.) . .	11.59	11.15	10.87	10.89	10.76	7.39	7.55			8.54	7.44
M. g. Broach fully good (pence p. lb.) .	n. 4.40	n. 4.35	n. 4.35	n. 4.35	n. 4.34	n. 5.06	n. 4.50			4.81	4.46
Le Havre: Middling, Gulf (francs p. 50 kg.)	204.00	203.00	206.00	213.00	212.50	222.50	212.00			233.75	216.00
Liverpool (pence per lb.):											
Middling fair . . . . .	n. 6.23	n. 6.41	n. 6.53	n. 6.64	n. 6.61	n. 6.66	n. 6.13			6.76	5.85
Middling . . . . .	5.13	5.31	5.43	5.54	5.48	5.51	4.97			5.61	4.79
São Paulo, g. f. . . . .	5.43	5.61	5.73	5.84	5.81	5.76	5.13			5.87	4.98
M. g. Broach, f. g. . . . .	n. 4.08	n. 4.23	n. 4.28	n. 4.40	n. 4.40	n. 5.09	n. 4.54			5.01	4.34
Sakellaridis, f. g. f. . . . .	6.93	7.10	7.26	7.06	7.12	7.75	7.42			7.77	6.76
BUTTER.											
										1932	1931
Copenhagen (a) Danish (Crs. p. quint.) . .	206.00	206.00	202.00	195.00	191.75	189.50	209.00			178.70	209.00
Leeuwarden, Commission for the Dutch butter quotations (a) (florins p. kg.) .	0.65	0.65	0.70	0.70	0.68	0.81	1.17			0.94	1.34
Zulfen, auction: Dutch (prices for home consumption; fl. p. kg.) 2)	1.58	1.58	1.63	1.63	1.62	1.57	1.18			1.27	1.38
Hamburg, auction (b): Schleswig-Holstein butter, with qual. mark (Rm. p. 50 kg.)	129.59	129.20	129.08	129.02	128.69	120.50	120.45			115.83	131.22
Kempten (b): Allgäu butter (Rpf. p. 1/2 kg.) 3)	123	123	123	123	123	107 1/4	101			107	110
London (c) (shillings p. cwt.):											
British blended . . . . .	126/-	126/-	121/4	121/4	121/4	125/1	140/-			131/6	140/4
Danish . . . . .	120/-	118/-	117/-	117/-	114/3	126/2	135/6			123/2	133/4
Irish creamery, salted . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	107/6	121/9			n. 111/-	119/5
Dutch . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	115/-	119/10			n. 115/10	132/1
Argentine . . . . .	98/-	96/-	92/-	n. q.	n. q.	97/-	116/-			103/9	117/7
Siberian 4) . . . . .	84/-	84/-	88/-	88/-	89/6	93/5	n. q.			93/3	n. q.
Australian, salted . . . . .	94/-	94/-	98/-	104/-	107/-	98/-	117/-			105/7	116/8
New Zealand, salted . . . . .	96/-	96/-	100/-	105/-	108/3	104/10	122/6			109/10	119/11
CHEESE.											
Milan (lire p. quintal):											
Parmigiano-Reggiano, 1st quality, last year's production . . . . .	865.00	865.00	865.00	865.00	865.00	980.75	975.00			1,016.00	1,103.00
Green Gorgonzola, mature, choice . . .	425.00	425.00	425.00	425.00	423.00	667.50	586.25			512.70	616.00
Rome: Roman pecorino, choice (lire p. q.)	775.00	775.00	800.00	800.00	847.00	1,275.00	1,175.00			1,251.00	1,121.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . .	23.00	23.00	23.00	23.00	21.75	29.25	27.37			24.41	32.63
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.) . . . . .	28.50	28.00	27.50	26.50	26.87	33.00	36.25			26.92	37.93
Kempten (b): (Rpf. p. 1/2 kg.):											
Soft cheese, green (20 % butterfat) . .	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	21 1/4	25			21	24
Emmenthal from the Allgäu (whole milk cheese) 1st quality . . . . .	71	71	71	71	71	76 1/4	94 1/4			81 1/4	97 1/2
London (c) (shillings p. cwt):											
English Cheddar . . . . .	98/-	98/-	98/-	96/-	96/-	106/-	95/6			109/-	99/10
Canadian . . . . .	58/-	56/-	57/-	57/-	57/9	72/7	72/9			72/10	75/9
New Zealand . . . . .	55/-	53/-	50/6	52/6	54/1	64/11	71/3			63/1	63/2
Liverpool (c): English Cheshire, un- graded (sh. p. cwt.) . . . . .	98/-	98/-	98/-	98/-	98/-	100/4	119-			103/10	94/3

n. q. = not quoted. — n = nominal. — a) Thursday prices. — b) Wednesday prices. — c) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Before January 1933: quotations in Maastricht; see note on page 425 of the *Crop Report* of June. — 3) The method of quotation was changed in January 1932; in June 1933 another change has occurred; see note on page 425 of the *Crop Report* of June. — 4) September 1932-January 1933 and July - 6 Sept. 1933: Russian. — 5) Price of 31 October.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	Oct.	Sept.	Aug.	July	June	May	Oct.	Oct.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>GERMANY</b>										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	98.9	97.5	97.0	100.6	100.8	99.4	100.3	112.5	112.0	119.3
Livestock . . . . .	72.3	69.8	66.8	62.3	59.7	59.2	66.2	76.9	65.5	83.0
Livestock products . . . . .	109.5	105.7	102.1	96.2	93.1	93.2	98.7	106.7	93.9	108.4
Feeding stuffs . . . . .	90.8	86.3	84.0	87.3	86.6	84.2	85.2	95.5	91.6	101.9
Total agricultural products . . . . .	92.7	89.9	87.7	86.6	85.1	84.2	88.0	98.5	91.3	103.8
Fertilizers 1) . . . . .	71.1	70.8	70.2	69.1	71.9	71.2	69.4	74.0	70.4	76.5
Agricultural dead stock . . . . .	112.1	112.1	111.9	111.9	111.4	110.9	119.0	129.5	116.1	130.7
Finished manufactures ("Konsumgüter") . . . . .	113.7	113.2	112.8	112.2	110.8	109.9	113.0	135.8	117.5	140.1
Wholesale products in general . . . . .	95.7	94.9	94.2	93.9	92.9	91.9	94.3	107.1	96.5	110.9
<b>ENGLAND AND WALES</b>										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	107	107	105	101	100	102	100	113	109	120
Feeding stuffs . . . . .	78	80	83	85	85	85	89	83	95	83
Fertilizers . . . . .	87	87	88	91	91	91	87	89	90	96
Wholesale products in general 2) . . . . .	...	94.9	95.5	96.1	95.6	95.2	91.5	96.8	94.9	97.7
<b>ARGENTINA</b>										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	49.8	55.3	57.6	61.2	55.8	54.2	60.0	63.3	59.5	55.8
Meat . . . . .	70.4	70.4	68.4	66.2	64.1	65.0	65.3	97.9	69.8	94.3
Hides and skins . . . . .	60.6	66.5	73.7	75.7	74.8	72.3	54.6	61.5	53.1	64.5
Wool . . . . .	56.9	58.4	52.5	59.0	58.0	49.6	45.2	60.3	44.2	61.2
Dairy products . . . . .	58.7	61.1	67.0	66.9	55.4	48.4	53.7	74.2	56.9	74.5
Forest products . . . . .	71.3	70.5	74.3	75.7	75.7	71.8	65.2	83.5	68.4	99.3
Total agricultural products . . . . .	54.3	58.5	60.2	63.0	58.8	56.7	59.0	68.9	59.1	63.8
<b>CANADA</b>										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	44.6	49.5	54.9	60.8	49.4	46.9	36.8	41.8	40.7	43.6
Animals and animal products . . . . .	62.8	63.4	60.5	59.0	57.9	58.4	58.4	72.3	60.9	77.6
Total Canadian farm products . . . . .	51.4	54.7	57.0	60.1	52.6	51.2	44.9	53.2	48.3	56.3
Fertilizers . . . . .	78.4	75.8	75.8	73.0	73.0	73.0	72.3	74.7	71.8	82.6
Consumers' goods (other than foodstuffs, etc) . . . . .	77.3	77.4	76.2	75.3	75.0	75.5	78.6	79.3	78.8	80.0
Wholesale products in general . . . . .	67.9	68.9	69.4	70.5	67.6	66.9	65.0	69.9	67.0	72.1
<b>ESTONIA</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported . . . . .	...	...	...	...	...	...	112	127	113	129
Commodities exported . . . . .	...	...	...	...	51	56	57	70	58	76
Agricultural products imported and exported . . . . .	...	...	...	...	...	...	72	86	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930), as well as to pages 77 to 79 of the *Crop Report* of January 1932 and to page 517 of the *Crop Report* of July 1932.

1) From July 1932 new series. — 2) Calculated by the *Statist*, reduced to base-year 1913 = 100.

COUNTRIES AND CLASSIFICATIONS	Oct.	Sept.	Aug.	July	June	May	Oct.	Oct.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
UNITED STATES										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	68	78	81	94	63	62	36	46	44	63
Fruits and vegetables . . . . .	86	101	120	103	74	68	59	70	71	98
Meat animals. . . . .	63	62	63	66	66	65	60	79	63	93
Dairy products . . . . .	78	76	72	71	65	63	68	95	70	94
Poultry and eggs . . . . .	94	77	67	67	55	62	102	110	80	96
Cotton and cottonseed . . . . .	71	69	71	84	69	65	51	42	46	63
Total agricultural products . . . . .	70	70	72	76	64	62	56	68	57	80
Commodities purchased by farmers 1) . . . . .	116	116	112	105	103	102	105	126	107	124
Agricultural wages 1) . . . . .	...	—	—	78	—	—	84	113	86	116
UNITED STATES										
(Bureau of Labor)										
1926 = 100.										
Grains . . . . .	58.2	63.9	64.6	73.4	57.4	52.8	34.4	44.3	39.4	53.0
Livestock and poultry . . . . .	45.4	46.7	45.9	47.4	46.6	46.8	45.0	57.6	48.3	63.9
Other farm products . . . . .	61.2	61.2	62.5	63.7	56.2	51.8	52.1	64.2	51.4	69.2
Total agricultural products . . . . .	55.7	57.0	57.6	60.1	53.2	50.2	46.9	58.8	48.2	64.8
Agricultural implements . . . . .	83.7	83.2	83.2	83.0	83.0	83.0	84.7	92.3	84.9	94.0
Fertilizer materials . . . . .	67.6	66.6	69.0	68.6	68.0	66.8	63.4	70.2	66.9	76.8
Mixed fertilizers . . . . .	68.3	67.8	64.4	63.3	63.0	63.1	66.5	77.2	69.4	82.0
Cattle feed . . . . .	60.4	64.2	78.0	82.4	55.8	54.4	42.7	49.4	45.9	62.7
Non-agricultural commodities . . . . .	74.4	73.7	72.0	70.7	67.4	65.4	68.1	71.2	68.3	73.0
Wholesale products in general. . . . .	71.2	70.8	69.5	68.9	65.0	62.7	64.4	68.4	64.8	71.1
FINLAND										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals . . . . .	81	83	92	93	92	91	89	73	90	77
Potatoes . . . . .	42	46	84	106	106	95	68	49	71	68
Fodder . . . . .	78	75	73	69	69	68	67	53	69	63
Meat . . . . .	58	64	66	64	68	69	56	54	61	64
Dairy products . . . . .	86	84	79	77	73	71	76	77	76	76
Total agricultural products . . . . .	74	74	75	75	75	73	72	67	74	72
Wholesale products in general. . . . .	90	90	90	90	89	88	90	82	90	84
HUNGARY										
(Central Bureau of Statistics)										
1913 = 100.										
Agricultural and livestock products . . . . .	54	53	54	57	66	66	75	88	—	—
Wholesale products in general. . . . .	71	70	71	73	79	79	80	97	—	—
ITALY										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products . . . . .	272.46	274.73	268.77	261.20	268.08	272.28	326.81	337.20	339.63	343.11
Wholesale products in general. . . . .	277.01	280.71	282.45	283.26	284.98	282.24	304.33	329.80	309.91	341.57
NEW ZEALAND										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy produce . . . . .	95.6	89.7	86.2	85.7	82.9	77.3	102.4	106.0	93.4	98.9
Meat . . . . .	126.8	115.7	120.1	113.9	108.8	107.5	95.5	130.9	110.9	130.1
Wool . . . . .	73.8	73.8	73.8	65.8	62.6	56.7	66.8	60.6	62.5	67.9
Other pastoral produce . . . . .	95.0	90.9	94.5	81.8	66.7	55.1	63.1	66.4	62.2	76.7
All pastoral and dairy produce . . . . .	97.4	91.9	91.8	87.0	82.5	77.4	88.1	96.9	87.0	96.5
Field products . . . . .	117.8	118.2	115.8	116.0	114.8	113.9	95.4	103.2	110.2	115.5
Total agricultural products . . . . .	97.9	92.7	92.5	87.8	83.4	78.4	88.3	97.0	87.7	97.0

1) 1910-14 = 100.

COUNTRIES AND CLASSIFICATIONS	Oct.	Sept.	Aug.	July	June	May	Oct.	Oct.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	119	120	116	112	116	116	116	106	120	125
Potatoes . . . . .	90	97	168	160	91	84	75	109	101	130
Pork . . . . .	86	87	78	76	81	79	100	92	91	96
Other meat . . . . .	103	105	106	107	115	119	105	127	109	218
Eggs . . . . .	99	99	82	71	60	68	120	126	93	108
Dairy products . . . . .	129	130	127	121	119	119	131	131	124	156
Concentrated feeding stuffs . . . . .	96	95	94	95	94	98	104	97	104	121
Maize . . . . .	81	83	83	82	85	85	92	73	90	108
Fertilizers . . . . .	84	83	92	92	92	92	81	81	89	105
<b>NETHERLANDS 2)</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	62	64	52	46	36	38	44	58	4) 42	4) 58
Animal products . . . . .	53	52	50	49	50	51	55	58	4) 51	4) 57
Total agricultural products . . . . .	55	55	51	49	47	48	52	58	4) 49	4) 57
Agricultural wages . . . . .	74	74	74	74	74	74	83	95	4) 81	4) 93
Wholesale products in general 3) . . .	...	50.7	49.4	49.4	49.4	48.7	52.1	60.2	77.8	65.7
<b>POLAND 2)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	37.5	38.3	36.1	50.8	53.4	47.9	41.8	51.0	49.8	53.9
Worked-up plant products . . . . .	47.5	49.3	48.8	64.4	65.2	60.6	53.8	61.8	61.3	65.9
Total products of plant origin . . . . .	42.5	43.7	42.3	57.5	59.4	54.2	47.8	56.6	55.6	60.0
Animals . . . . .	42.9	45.1	43.7	40.8	41.8	42.9	41.4	47.5	43.1	55.8
Dairy products . . . . .	51.1	48.6	43.4	43.7	39.6	42.6	53.5	66.3	55.4	68.0
Total products of animal origin . . . . .	46.6	46.9	45.6	42.3	41.0	42.8	46.7	55.3	48.2	60.8
Total agricultural products . . . . .	44.2	45.1	42.8	50.4	50.7	49.0	47.3	55.6	52.0	59.7
Fertilizers . . . . .	98.6	98.6	103.2	99.8	99.8	94.5	112.9	118.5	105.5	120.2
Industrial products . . . . .	63.1	63.4	63.6	64.5	64.1	63.0	68.5	75.3	69.6	79.4
Wholesale products in general . . . . .	54.4	55.0	53.9	58.2	58.1	56.8	58.8	66.3	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	49.9	48.0	49.3	58.1	61.1	59.3	58.1	71.1	67.5	74.3
Animal products . . . . .	57.5	58.2	55.6	54.0	57.8	55.2	58.5	66.1	56.6	72.2
Industrial products . . . . .	68.8	67.6	68.5	70.5	72.0	71.8	67.5	69.3	66.2	71.4
Wholesale products in general . . . . .	61.5	60.7	60.7	63.7	66.1	64.9	63.9	69.5	65.2	72.9

1) The agricultural years refer to the period 1 April-31 March. — 2) Average data for the year 1932 respectively 1932-33 are provisional.  
 — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Agricultural year 1 July-30 June.

## RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	17 Nov. 1933	10 Nov. 1933	3 Nov. 1933	27 Oct. 1933	AVERAGE						
					Oct. 1933	Nov. 1932	Nov. 1931	Commercial Season			
								1932-33	1931-32		
SHIPMENTS OF WHEAT AND MAIZE.											
Danube to Antwerp/Hamburg . . .	(shill. per long ton)	15/-	15/-	14/6	14/6	14/3	14/1½	15/4½	13/9	14/6	14/6
Black Sea to Antwerp/Hamburg . .		10/6	10/6	10/6	11/-	10/9¾	10/3	11/6	10/-	10/10	10/10
St. John to Liverpool 1) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7	1/7	1/7
Port Churchill to United Kingdom .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	3/-	—	—
Montreal to United Kingdom . . . .	(shill. per 480 lbs.)	1/5	1/5	1/6	1/6	1/6	2/-	2/7½	1/8½	1/8	0.08
Gulf to United Kingdom . . . . .	1) 2/6	1) 2/6	1) 2/6	1) 2/6	1) 2/6	1) 2/6	1) 2/-	2/10	1) 2/-	2/6	2/6
New York to Liverpool 1) . . . . .	1/6	1/6	1/6	1/6	1/6	1/6	1/6	2/11½	1/6	1/8	1/8
Northern Range to U. K./Continent.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 2/3	0) 0.06	0.09	0.09
North Pacific to United Kingdom (sh. per long ton) . . . . .	n. 19/6	n. 19/6	n. 19/6	n. 18/6	n. 18/6	n. 18/6	n. 22/6	n. 23/8	n. 20/10	n. 22/2	2.30
Vancouver to Yokohama 1) (gold \$ per sh. ton).	2.50	2.50	2.50	2.15	2.15	2.15	2.00	2.30	1.98	1.98	2.30
La Plata Down River, Necoches, Bahia Blanca 2) to U. K./Cont.	n. 14/-	14/-	14/-	13/-	12/9¾	n. 12/9	16/-	14/-	16/-	16/-	16/-
La Plata Up River 3) to U. K./Continent..	(shill. per long ton)	17/-	16/-	15/9	14/9	14/1½	15/9	17/6	15/10	17/6	17/6
Karachi to U. K./Continent 4) . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	20/-	20/-
Western Australia to U. K./Continent . . . . .	n. 24/3	24/3	24/3	23/9	23/8	n. 26/6	29/11½	24/6½	26/-	26/-	26/-
SHIPMENTS OF RICE.											
Saigon to Europe . . . . .	(shill. per long ton)	n. 24/-	n. 24/-	n. 23/6	n. 23/6	n. 23/-	n. q.	1) n. 23/5	23/5	24/3	24/3
Burma to U. K./Continent. . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	24/8	n. 23/3	23/9	23/9

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lb.

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (—)			
	17 Nov. 1933	10 Nov. 1933	3 Nov. 1933	27 Oct. 1933	17 Nov. 1933	10 Nov. 1933	3 Nov. 1933	27 Oct. 1933
Germany: reichsmark . . . . .	123.050	122.950	123.150	123.125	— 0.3	— 0.4	— 0.2	— 0.3
Argentina: paper peso *) . . . . .	132.021	132.181	131.512	131.079	— 40.0	— 39.9	— 40.2	— 40.4
Belgium: belga . . . . .	72.000	71.975	72.025	72.000	— 0.1	— 0.1	— 0.1	— 0.1
Canada: dollar . . . . .	3.150	3.250	3.300	3.425	— 39.2	— 37.3	— 36.3	— 33.9
Denmark: crown . . . . .	74.500	73.250	71.500	72.750	— 46.4	— 47.3	— 48.5	— 47.6
Egypt: pound 2) . . . . .	16.650	16.437	16.120	16.300	— 34.0	— 34.8	— 36.1	— 35.4
United Kingdom: pound sterling . . .	3.117	3.207	3.315	3.432	— 39.9	— 38.1	— 36.0	— 33.8
United States: dollar . . . . .	20.200	20.205	20.212	20.215	— 0.5	— 0.5	— 0.5	— 0.4
France: franc . . . . .	69.250	67.000	67.000	67.000	— 23.6	— 26.1	— 26.1	— 26.1
Indo-China: piaster 3) . . . . .	124.042	122.949	121.061	122.250	— 34.4	— 35.0	— 36.0	— 35.4
Hungary: pengő 4) . . . . .	27.195	27.150	27.170	27.215	— 0.3	— 0.5	— 0.4	— 0.2
India: rupee *) . . . . .	97.125	98.006	97.392	98.479	— 62.4	— 62.1	— 62.3	— 61.9
Italy: lira . . . . .	208.150	208.325	208.100	208.500	— 0.1	— 0.0	— 0.1	— 0.0
Japan: yen *) . . . . .	57.825	57.825	57.825	57.825	— 0.5	— 0.5	— 0.5	— 0.5
Netherlands: florin . . . . .	n. 3.000	n. 3.000	n. 3.000	n. 3.000	— 3.2	— 3.2	— 3.2	— 3.2
Poland: zloty . . . . .	85.500	84.500	82.500	84.250	— 38.4	— 39.2	— 40.6	— 39.3
Rumania: leu . . . . .	15.325	15.325	15.325	15.325	— 0.2	— 0.2	— 0.2	— 0.2
Sweden: crown . . . . .								
Czechoslovakia: crown . . . . .								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) a conversion has been made, the original exchange rates on London being converted into Swiss francs by means of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

**RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES  
IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)**

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada	United States	Denmark	Egypt	France	Indo-China (2)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)
Germany . . . . .	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	6.080	0.979	1.362	0.653	4.526	0.478	0.593	2.123	39.825	8.040	1.235		
Argentina . . . . .	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	14.326	2.200		
Belgium . . . . .	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	0.939	0.145		
Canada . . . . .	Dollar	4.198	2.356	35.959	1.000	3.731	20.230	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	33.751	5.183		
United States . . . . .																				
Denmark . . . . .	Crown	1.125	0.631	9.637	0.268	1.000	5.422	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	9.045	1.389		
Sweden . . . . .																				
Egypt . . . . .	Plastre	0.207	0.116	1.777	0.049	0.184	1.000	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	1.668	0.256		
France . . . . .	Franc	0.164	0.092	1.409	0.039	0.146	0.793	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.322	0.203		
Indo-China . . . . .	Plastre (2)																			
Great Britain . . . . .	Shilling	1.021	0.573	8.750	0.243	0.908	4.923	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	8.213	1.261		
Hungary . . . . .	Pengo	0.734	0.412	6.289	0.175	0.653	3.580	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	5.903	0.905		
India . . . . .	Ruppee	1.532	0.860	13.125	0.365	1.362	7.384	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	12.319	1.892		
Italy . . . . .	Lira	0.221	0.124	1.892	0.053	0.196	1.065	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	1.776	0.273		
Japan . . . . .	Yen	2.092	1.174	17.924	0.498	1.860	10.084	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	16.824	2.583		
Netherlands . . . . .	Florin	1.687	0.947	14.454	0.402	1.450	8.132	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	13.567	2.083		
Poland . . . . .	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	3.786	0.581		
Rumania . . . . .	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.202	0.031		
Czechoslovakia . . . . .	Crown	0.124	0.070	1.065	0.030	0.111	0.599	0.756	0.122	0.169	0.081	0.563	0.059	0.074	0.264	4.953	1.000	0.154		
Former Latin monetary union (3) . . . . .	Gold Franc	0.810	0.455	6.938	0.193	0.720	3.903	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.253	6.512	1.000		

(1) Each figure gives the equivalent of the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. —  
(2) 1 Gold piastre equals 10 francs. — (3) L

# AGRICULTURAL SCIENCE AND PRACTICE





# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

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## WORLD PRODUCTION OF CEREALS

*Wheat.* — In Europe several countries have revised their provisional estimates but the consequent modifications are practically negligible. Czechoslovakia has considerably increased its estimate from 66 to 73 million bushels, thus joining the already large ranks of the countries that have in 1933 registered the largest crop of the last ten years, ranks that include Austria, France, Germany, Great Britain, Greece, Italy, the Netherlands and Sweden. Taking into account these revisions, total European production in 1933 has increased by 8 million bushels over the estimate of the previous month.

In North America the final data for the United States shows a slight increase of about 10 million bushels on the preceding estimate; revised data for 1932 indicate also an increase of 19 million bushels on the previous estimate. A slight increase in Canadian production, of which the final figures will be established next month, is also expected. In Africa Algeria has made an appreciable modification in its provisional estimate, raising it from 28 to 30 million bushels: the Union of South Africa, on the other hand, announces a reduction from 10.7 to 9.4 million due to the serious drought damage. Lastly, for the two great exporting countries of the southern hemisphere there are now available the first official estimate for Argentina and the third estimate for Australia. For Argentina production is estimated at 256 million bushels against 235 last year and 249 on the average of the five years ending 1931-32. The estimate of area sown is modified to 19,660,000 acres, an increase of 760,000 on the previous figure, the yield of the new crop is calculated at 13.1 bushels per acre sown, one of the best in recent years.

On the other hand, due to the bad weather which hindered ripening and bringing in of the crop, Australia announces a further decrease of production, which was forecast in October at 180 million bushels and reduced in November to 165 million, is now calculated at 160 million. The new crop is thus much below that of last year, which attained 212 million bushels, and scarcely reaches the five-year average, which is calculated at 162 million.

On the basis of these new estimates and revisions world production of wheat is as follows :

*World Wheat Production (1)*

(Million bushels).

Years	Europe			North America	South America	Asia	Africa	Oceania	Total	U.S.S.R.
	Importing countries	Exporting countries	Total							
Average 1923-27 . . .	920	323	1,243	1,210	275	402	180	143	3,381	694
1928 . . . . .	977	433	1,409	1,504	399	342	116	168	3,938	807
1929 . . . . .	1,071	378	1,449	1,129	221	384	136	134	3,453	694
1930 . . . . .	915	446	1,360	1,290	273	456	115	221	3,715	989
1931 . . . . .	974	462	1,435	1,238	264	407	131	197	3,672	...
1932 . . . . .	1,207	283	1,490	1,209	277	393	140	220	3,729	...
1933 . . . . .	1,258	435	1,693	811	300	415	118	165	3,500	...

1) Not including China, Persia, Turkey and Iraq.

Last October, when the first forecast gave a total for 1933 of 3,470 million bushels, the opinion was expressed that, while susceptible to modifications, this estimate would differ to no important degree from the final results while the modifications to be made for the separate continents might be relatively larger, especially in the southern hemisphere. Though the figures at present available are not final for all countries, it would appear that the opinion formed was fairly exact. In fact, total world production as calculated on the basis of the latest estimates differs by only 30 millions from the October figure while the totals for the various continents show fairly important modifications ; in the southern hemisphere in particular the estimate for South America is 32 million bushels higher than previously forecast while that for Oceania shows a decrease of about 30 millions. On the whole there is, however, a fairly high degree of compensation amongst the separate continental totals and the variations in total volume of the crop are so small that the statistical position in the present season remains in its large lines the same as traced in the Crop Report of October and reproduced here.

*World Wheat Position*

	World exportable surpluses	World requirements	End of season exportable stocks
(Million bushels)			
1933-34 forecast . . . . .	1,105	525	580
1932-33 . . . . .	1,321	629	692
1931-32 . . . . .	1,387	799	588
1930-31 . . . . .	1,388	824	564
1929-30 . . . . .	1,180	628	502
1928-29 . . . . .	1,435	923	512
1927-28 . . . . .	1,128	809	319
1926-27 . . . . .	1,076	827	249

The heavy fall in world exportable supplies, of which the total is reduced this season to almost normal proportions, would constitute without doubt a factor in recovery on the international market for wheat if it had a counterpart in a normal demand from importing countries. Such demand appears, however, to be very small, due to the abundant crops obtained in almost all the countries that were previously the best purchasers from the surplus-producing countries and also to the increasing obstacles to international trade.

The estimate of world requirements made last October at 525 million bushels is one of the smallest, if not actually the smallest, recorded for a number of years. No new element such as to lead to any appreciable modification of this figure has been introduced up to the present though the data of world exports in the first quarter of the current season reproduced below do not show any marked decrease with respect to last year.

*World wheat net exports (including flour in terms of wheat)*  
(million bushels).

	1933-34	1932-33	1931-32	1930-31	1929-30
August . . . . .	45	41	66	77	71
September . . . . .	48	49	78	74	57
October . . . . .	44	61	74	84	60
November . . . . .	...	54	67	77	51
December . . . . .	...	59	64	59	50
January . . . . .	...	61	62	54	48
February . . . . .	...	62	73	70	45
March . . . . .	...	62	74	67	50
April . . . . .	...	40	70	62	42
May . . . . .	...	53	67	81	50
June . . . . .	...	42	59	67	51
July . . . . .	...	45	45	52	53
<i>Total Season . . . (*)</i>	<i>535</i>	<i>629</i>	<i>799</i>	<i>824</i>	<i>628</i>
Total August-October . . . .	137	151	218	235	188
Percentage . . . . .	26 %	25 %	27 %	29 %	30 %

(\*) Forecast.

It must, in fact, be noted that on the one hand the European demand was sustained in the first months of the season by the delay in bringing in the crop in several countries due to the cold, rainy summer and on the other hand the proportion of the imports that has not entered into consumption but has remained in storage at the ports of entry is larger than last year.

Prices in the first part of the season tended to be very weak, falling to a level in mid-December lower than that of December 1932, which was the lowest of recent years. Despite these low prices there was no recovery in demand.

From this month the international markets will begin to feel the influence of the first reports on the extent and condition of autumn sowing and, if this information is of a character to provoke a reversal of the downward tendency that has till now prevailed there might follow a growth of international trade.

The United States have just announced that winter sowings have been reduced by 1.7 million acres, 4 % on those of last year, a reduction that is not so heavy as envisaged in the restriction planned by the Government. Crop condition on 1 December was somewhat better than at the same date last year.

In the greater part of Europe and in the U. S. S. R. sowings were made under almost normal conditions but in several countries there was a certain delay due to the bad weather in autumn and it was feared that the cold and frosts in a number of countries and the excessive rains in others would cause losses to the new crop. Crop condition in India, where development is already advanced, is generally satisfactory and better than last year.

*Rye.* — The revisions in Czechoslovakia and Latvia and in the United States do not cause any serious modifications in the provisional date for Europe and North America. The new estimate for Argentina indicates a production very much below that of last year.

### *World Production of Rye (1)*

(million bushels).

	Europe	North America	South America	Total	U.S.S.R.
Average 1923-27. . . . .	807	63	6	876	2) 937
1928 . . . . .	905	51	10	966	760
1929 . . . . .	941	47	5	993	803
1930 . . . . .	925	67	5	997	929
1931 . . . . .	776	39	10	825	...
1932 . . . . .	933	49	14	996	...
1933 . . . . .	984	26	11	1,021	...

(1) Excluding U.S.S.R., China and Turkey. — (2) 1925-27.

World production of rye, excluding the U. S. S. R., is thus confirmed to be larger than in recent years.

*Barley.* — Various European countries have revised their provisional estimates but for the most part only small corrections are involved; the increase by 7 millions in the figure for Czechoslovakia may in particular be noted.

The modification in the final estimate of the crop in the United States is also small. A relatively considerable increase in production is indicated in the case of Algeria.

The first estimate of Argentina gives a very high figure, 10 % above that of last year and almost double the five-year average.

*World Production of Barley (1)*

(million bushels).

	Europe	North America	Asia	Africa	S. America and Oceania	Total	U.S.S.R.
Average 1923-27 . . . . .	643	276	262	96	37	1,314	2) 239
1928 . . . . .	744	473	230	115	37	1,599	262
1929 . . . . .	827	386	266	119	32	1,630	331
1930 . . . . .	758	441	248	96	32	1,575	312
1931 . . . . .	689	271	248	106	37	1,351	...
1932 . . . . .	781	381	253	110	46	1,571	...
1933 (Preliminary) . . . . .	770	221	248	101	50	1,390	...

(1) Excluding U.S.S.R., China and Turkey. — (2) 1925-27.

Despite the slight increase with reference to last month in the total of world barley production, excluding the U. S. S. R., the 1933 crop is a small one consequent on the very poor outturn in North America.

*Oats.* — The various corrections in the crop results announced by several European countries leave the total production of this continent practically unchanged. The United States have made a slight increase in the preceding estimate. The forecast of the Argentine crop indicates a mediocre one.

*World Production of Oats (1)*

(million bushels of 32 lb.).

	Europe	North America	Asia and Africa	S. America and Oceania	Total	U.S.S.R.
Average 1923-27 . . . . .	1,715	1,702	41	76	3,534	2) 942
1928 . . . . .	1,881	1,798	41	96	3,816	1,135
1929 . . . . .	2,060	1,419	48	103	3,630	1,084
1930 . . . . .	1,709	1,722	48	96	3,575	1,145
1931 . . . . .	1,695	1,467	41	103	3,306	...
1932 . . . . .	1,881	1,653	41	103	3,678	...
1933 (Preliminary) . . . . .	1,929	1,053	41	83	3,106	...

(1) Excluding U.S.S.R., China and Turkey. — (2) 1925-27

As for barley, world production of oats (excluding the U. S. S. R.) has been small due to the extremely poor crop obtained in North America.

## CEREALS

*Bulgaria* : Abundant rainfall and relatively warm weather in November favoured the germination of winter cereals, the sowing of which had been nearly finished in the latter half of the month. Tillage for spring sowing had begun.

*Estonia* : The frozen soil at the beginning of November was rapidly covered with a snow cover, which, however, owing to the variable weather, did not last long.

*France* : November was rainy, especially in the South, where sowings were restricted and where the wheat has suffered from excessive moisture. A very large fall in temperature with frosts occurred in the West, the Paris basin, the North, East and East-centre, during the first ten days of December; sowings were checked nearly everywhere and the growth of the last sowings effected towards the end of November was very slow; towards 10 December, the persistent cold began to cause some anxiety. In the South-west especially in the Garonne valley, weather conditions were very favourable to the sowing and sprouting of cereals.

The cereal situation towards 10 December was on the whole satisfactory. Hardly any appreciable variations took place in the extent of sowing.

*Great Britain and Northern Ireland* : In England and Wales the open weather has encouraged the growth of autumn-sown corn which has germinated well and presents a healthy and vigorous appearance. The weather during the greater part of November was open and favourable for agricultural operations. Considerable progress was made with cultivation and sowing and at the end of the month all work was well forward. In Scotland the autumn sowing of wheat was practically completed in most districts by the middle of November; the plants are growing strongly and look exceptionally well.

*Greece* : According to the Ministry of Agriculture sowing of winter crops were carried out under good conditions and were completed at the end of November throughout the country. It is estimated that the areas sown this year will be 10 % larger than those of last year.

*Hungary* : During the two weeks from 7 to 21 November the weather was characterized by generally normal temperatures and by precipitation above the average. The rainy weather hindered the work of sowing winter cereals which, at the end of the period considered, had not everywhere been completed.

Sowings effected early have germinated well and are growing satisfactorily; those effected late are thin and are growing slowly.

*Italy* : Excessive rains appreciably hindered operations in November. Sowings of winter cereals were carried out under unfavourable conditions and were backward; in some areas they had to be suspended. Germination was generally, however, regular, and, despite excessive moisture and cold, condition of the young plants was satisfactory.

Severe temperatures have, however, hindered wheat sown too late.

## Cereals.

COUNTRIES	†) AREA				†) PRODUCTION							
	1933	1932	Average	% 1933	1933	1932	Average	1933	1932	Average	% 1933	1933
	—	—	1927	1933/34	—	—	1927	—	—	1927	1933/34	—
	1933/34	1932/33	to 1931	1932/33	1933/34	1932/33	to 1931	1933/34	1932/33	to 1931	1932/33	1933/34
	1,000 acres				1,000 centals				1,000 bushels			
			1927/28 to 1931/32	Aver. 1932/33 = 100			1927/28 to 1931/32			1927/28 to 1931/32	Aver. 1932/33 = 100	
WHEAT.												
Germany . . .	5,728	5,635	4,460	101.7	128.4	123,495	110,299	81,594	205,820	183,828	135,987	112.0
Austria . . .	547	536	512	101.9	106.8	10,435	7,405	7,134	17,391	12,342	11,890	140.9
Belgium . . .	366	386	390	94.9	94.0	8,171	9,226	8,853	13,617	15,376	14,754	88.6
Bulgaria . . .	3,051	3,078	2,841	99.1	107.4	35,315	30,332	29,474	58,858	50,553	49,123	116.4
*Denmark . . .	260	245	259	105.8	100.3	...	6,598	6,440	10,997	10,733	...	...
Spain . . .	11,047	11,249	10,880	98.2	101.5	79,164	110,526	84,342	131,937	184,206	140,566	71.6
Estonia . . .	155	128	82	121.5	190.0	1,395	1,251	810	2,324	2,085	1,350	111.5
*Irish Free State . . .	52	21	28	243.1	183.1	...	498	680	...	831	1,133	...
Finland . . .	65	59	41	111.7	160.1	...	959	890	1,598	1,483	963	107.8
France . . .	13,359	13,429	13,096	99.5	102.0	203,202	200,117	166,429	338,663	333,522	277,376	101.5
Engl. and Wales . . .	1,660	1,288	1,381	128.9	120.2	35,258	24,752	26,844	58,763	41,253	44,740	142.4
Scotland . . .	768	52	56	149.8	139.5	2,083	1,344	1,299	3,472	2,240	2,165	155.0
*N. Ireland . . .	6	3	4	188.9	139.9	...	73	98	...	121	163	...
Greece . . .	1,732	1,480	1,338	117.1	129.4	17,148	12,158	7,011	28,580	20,263	11,685	141.0
Hungary . . .	3,936	3,793	4,014	103.8	98.0	54,088	38,678	48,963	90,146	64,462	61,603	139.8
Italy 1) . . .	12,568	12,185	12,031	103.1	104.5	178,582	166,155	136,684	297,631	276,920	227,802	107.5
Latvia . . .	309	255	170	121.1	182.1	4,035	3,175	1,791	6,725	5,292	2,984	127.1
Lithuania . . .	499	509	436	97.9	114.3	5,236	5,654	4,871	8,727	9,423	8,118	92.6
Luxemburg . . .	33	31	28	108.2	117.1	508	432	305	846	719	508	117.6
Malta . . .	10	10	9	101.0	104.4	183	181	175	305	301	291	101.2
Norway . . .	28	28	28	101.0	99.2	462	450	416	770	749	693	102.7
Netherlands . . .	332	297	150	111.7	221.7	8,924	8,217	3,812	14,874	13,694	6,353	108.6
Poland . . .	4,186	4,265	3,727	98.1	112.3	41,006	29,684	42,206	68,342	49,472	70,343	138.1
Portugal . . .	...	1,463	1,123	...	...	8,924	10,883	6,795	14,825	18,138	11,325	81.7
Rumania . . .	7,701	7,091	7,694	108.6	100.1	68,344	33,322	69,373	113,904	55,536	115,620	205.1
Sweden . . .	799	746	605	107.1	132.1	16,711	15,900	10,862	27,851	26,500	18,102	105.1
Switzerland 2) . . .	185	181	170	102.1	105.1	3,832	3,241	3,335	6,386	5,402	5,559	118.2
Czechoslovakia . . .	2,271	2,064	1,949	100.0	116.5	43,738	32,242	29,377	72,895	53,736	48,961	135.7
Yugoslavia . . .	5,137	4,820	4,991	106.6	102.9	57,950	32,067	52,078	96,581	53,444	86,795	180.7
Total Europe . . .	§ 77,245	75,058	72,208	102.9	107.0	1,009,148	888,581	825,411	1,681,831	1,480,939	1,375,656	113.6
*U. S. S. R. . . w)	28,058	32,337	22,107	86.8	126.9	—	—	—	—	—	—	—
Canada . . .	25,991	27,182	24,587	95.6	105.7	163,093	273,000	251,149	271,821	455,000	418,582	59.7
United States 1) w)	28,400	35,300	39,333	80.5	72.2	210,600	285,420	372,499	351,000	475,700	620,832	73.8
Mexico . . . s)	19,100	21,900	20,307	87.2	94.1	105,840	161,040	152,196	176,400	268,400	253,661	65.7
Total North Amer. . .	1,179	1,104	1,321	106.8	89.3	7,052	5,795	7,431	11,753	9,658	12,385	121.7
Korea . . .	794	793	866	100.0	91.3	486,585	725,255	783,275	810,974	1,208,758	1,305,460	67.1
India . . .	32,992	33,803	32,062	97.6	102.9	211,725	202,138	201,824	352,875	336,896	336,373	104.7
Japan . . .	1,500	1,247	1,201	120.3	124.9	23,158	18,802	18,114	38,596	31,336	30,189	123.2
Syria and Lebanon . . .	1,177	1,191	1,182	98.8	99.5	7,315	6,229	8,631	12,191	10,382	14,385	117.4
Turkey . . .	6,419	8,555	6,663	75.0	96.3	48,502	42,682	48,827	80,835	71,135	81,376	113.6
Total Asia . . .	42,882	45,589	41,974	94.1	102.2	295,683	274,834	282,590	492,801	458,054	470,980	107.6
Algeria . . .	4,001	3,736	3,718	107.1	107.6	18,288	17,542	18,007	30,479	29,236	30,012	104.2
Egypt . . .	1,426	1,762	1,606	80.9	88.8	23,971	31,552	25,524	39,951	52,586	42,539	76.0
Eritrea 3) . . .	9	15	67	58.3	41.5	66	88	20	110	147	33	75.0
Kenya 3) . . .	41	30	67	135.9	61.4	334	127	391	557	212	651	263.0
French Morocco . . .	3,026	2,713	2,695	111.5	112.3	15,172	16,782	15,738	25,286	27,970	26,229	90.4
Tunis . . .	1,754	2,392	1,802	73.3	97.4	5,512	10,472	7,015	9,186	17,453	11,692	52.6
Total Africa . . .	10,257	10,648	9,909	96.3	103.5	63,343	76,563	66,695	105,569	127,604	111,156	82.7
Argentina . . . 4)	19,662	19,791	20,505	99.4	95.9	153,707	141,228	149,511	256,173	235,376	249,180	108.8
*Uruguay . . .	1,234	947	1,074	130.2	114.9	...	...	7,138	...	...	11,897	...
Un. of South Afr. . .	1,401	1,556	1,137	90.1	123.2	5,622	6,376	5,586	9,370	10,627	9,309	88.2
Australia . . .	14,500	15,347	15,000	94.5	96.7	96,000	127,439	97,078	160,000	212,398	161,794	75.3
GRAND TOTALS . . .	§ 240,617	253,475	246,281	94.9	97.7	2,110,088	2,240,276	2,210,146	3,516,718	3,733,756	3,683,535	94.2

## RYE.

Germany . . .	11,179	10,996	11,434	101.7	97.8	192,405	184,385	166,978	343,581	329,261	298,177	104.3
Austria . . .	977	944	934	103.5	104.6	17,957	13,651	11,168	32,066	24,377	19,942	131.5
Belgium . . .	553	562	567	98.4	97.5	12,331	13,251	11,904	22,019	23,662	21,257	93.1
Bulgaria . . .	523	544	549	96.1	95.3	6,084	5,676	5,110	10,865	10,136	9,126	107.2
*Denmark . . .	352	297	379	118.4	92.9	4,892	5,476	4,892	8,736	9,778	...	...
Spain . . .	1,458	1,516	1,588	96.2	91.8	11,192	14,507	12,151	19,986	25,905	21,699	77.2

COUNTRIES	†) AREA					†) PRODUCTION							
	1933	1932	Average	%	1933/34 = 100	1933	1932	Average	1933	1932	Average	%	1933/34 = 100
	1933/34	1932/33	1927 to 1931	1933/34		1933/34	1932/33	1927 to 1931	1933/34	1932/33	1927 to 1931	1933/34	
			1927/28					1927/28			1927/28		
			to 1931/32					to 1931/32			to 1931/32		
1,000 acres					1,000 centals			1,000 bushels					
Estonia . . . .	373	364	351	102.7	106.3	4,680	3,983	3,664	8,358	7,113	6,543	117.5	127.7
Finland . . . .	563	538	533	104.6	105.8	7,855	7,261	6,719	14,027	12,966	11,998	108.2	116.9
France . . . .	1,714	1,732	1,853	98.9	92.5	20,562	18,971	18,190	36,718	33,876	32,482	108.4	113.0
Greece . . . .	191	163	142	117.0	134.1	1,823	1,472	920	3,255	2,629	1,643	123.8	198.0
Hungary . . . .	1,674	1,553	1,582	107.8	105.8	20,424	16,969	15,283	36,471	30,301	27,291	120.4	133.6
Italy 1) . . . .	285	288	306	98.9	93.2	3,805	3,535	3,587	6,794	6,313	6,406	107.6	106.1
Latvia . . . .	637	593	618	107.5	103.2	7,828	6,604	5,392	13,979	11,793	9,629	118.5	145.2
Lithuania . . . .	1,210	1,194	1,194	101.3	101.3	12,653	11,653	11,584	22,595	20,808	20,686	108.6	109.2
Luxemburg . . . .	20	20	18	102.6	114.7	307	278	217	549	496	388	110.7	141.6
Norway . . . .	16	16	19	96.2	83.4	246	292	288	438	522	515	84.0	85.2
Netherlands . . . .	406	410	476	99.2	85.4	7,665	7,650	8,756	13,688	13,661	15,636	100.2	87.5
Poland . . . .	14,312	13,951	14,120	102.6	101.4	140,876	134,713	139,631	251,565	240,560	249,342	104.6	100.9
Portugal . . . .	366	366	411	100.0	100.0	2,024	3,590	2,610	3,615	6,411	4,660	56.4	77.6
Rumania . . . .	958	861	834	111.3	114.8	9,753	5,888	7,428	17,417	10,513	13,264	165.7	131.3
Sweden . . . .	545	516	621	105.7	87.8	10,229	9,573	8,587	18,267	17,094	15,333	106.9	119.1
Switzerland . . . .	46	46	48	100.8	95.4	827	829	866	1,476	1,481	1,547	99.7	95.4
Czechoslovakia . . . .	2,584	2,569	2,580	100.6	100.1	45,978	47,970	36,896	82,104	85,661	65,885	95.8	124.6
Yugoslavia . . . .	633	600	563	105.4	112.5	5,409	4,664	4,162	9,659	8,328	7,431	116.0	130.0
Total Europe . . . .	§) 41,223	40,342	41,341	102.2	99.7	542,913	517,365	482,091	969,492	923,867	860,880	104.9	112.6
* U. S. S. R. w) . . . .	63,003	64,402	64,292	97.8	98.0	...	...	...	...	...	...	...	...
Canada . . . .	583	774	960	75.3	60.7	2,646	5,005	7,917	4,725	8,938	14,138	52.9	33.4
United States . . . .	2,300	3,300	3,254	69.7	70.7	11,872	22,456	22,608	21,200	40,100	40,371	52.9	52.5
Total North Amer. . . .	2,883	4,074	4,214	70.5	68.3	14,518	27,461	30,525	25,925	49,038	54,509	52.8	47.5
Turkey . . . .	640	504	656	126.9	97.6	5,512	4,718	5,505	9,842	8,425	9,830	116.8	100.1
Algeria . . . .	4	3	4	118.6	96.2	17	15	29	30	27	53	111.3	56.2
Argentina . . . .	4) 1,767	4) 1,624	4) 1,232	108.8	143.4	5,644	7,275	3,999	10,078	12,992	7,141	77.6	141.1
GRAND TOTALS . . . .	§) 46,517	46,547	47,447	99.9	98.0	568,604	556,834	522,149	1,015,367	994,349	932,413	102.1	108.9

## BARLEY.

Germany . . . .	3,917	3,875	3,799	101.1	103.1	76,421	70,872	66,774	159,214	147,652	139,115	107.8	114.4
Austria . . . .	418	416	398	100.5	105.1	8,212	6,043	5,615	17,109	12,590	11,698	135.9	146.3
Belgium . . . .	80	94	77	85.8	103.9	1,860	2,256	1,844	3,876	4,701	3,842	82.4	100.9
Bulgaria . . . .	577	568	601	101.6	96.1	7,934	6,769	7,065	16,529	14,102	14,720	112.7	112.3
*Denemark . . . .	860	854	887	100.8	97.0	...	22,247	22,076	...	46,349	45,993	...	...
Spain . . . .	4,521	4,837	4,516	93.5	100.1	46,582	63,632	44,731	97,047	132,569	93,192	73.2	104.1
Estonia . . . .	256	266	279	96.3	91.8	1,710	2,212	2,500	3,562	4,608	5,209	77.3	68.4
*Irish Free State . . . .	117	103	120	113.1	97.6	...	2,388	2,768	...	4,974	5,768	...	...
Finland . . . .	314	308	280	101.7	112.0	3,629	3,944	3,261	7,560	8,218	6,795	92.0	111.3
France . . . .	1,796	1,779	1,831	100.9	98.1	27,594	24,008	24,084	57,488	50,017	50,176	114.9	114.6
Engl. and Wales . . . .	751	961	1,081	78.2	69.5	14,134	17,181	19,663	29,447	35,793	40,965	82.3	71.9
Scotland . . . .	60	69	105	87.1	57.2	1,277	1,478	2,092	2,660	3,080	4,359	86.4	61.0
*N. Ireland . . . .	1	1	2	135.7	81.9	...	26	39	...	53	81	...	...
Greece . . . .	550	519	481	103.9	114.2	5,089	4,616	3,288	10,601	9,618	6,850	110.2	154.8
Hungary . . . .	1,203	1,160	1,100	103.7	109.4	16,671	13,854	12,977	34,733	33,030	27,037	105.2	128.5
Italy 1) . . . .	510	520	569	98.1	89.7	4,993	3,456	5,261	10,402	11,367	10,961	91.5	94.9
Latvia . . . .	456	457	432	99.8	105.6	4,298	4,247	3,476	8,955	8,849	7,942	101.2	123.6
Lithuania . . . .	512	497	487	103.0	105.1	5,060	5,263	4,626	10,541	10,975	9,638	106.0	109.4
Luxembourg . . . .	8	8	9	93.1	81.3	116	104	123	242	216	236	112.1	94.5
Malta 7) . . . .	6	6	7	92.1	84.3	119	129	143	248	269	297	91.9	83.5
Norway . . . .	142	137	141	103.6	100.8	2,282	2,608	2,253	4,754	5,453	4,693	87.5	101.3
Netherlands . . . .	44	49	72	88.4	60.5	1,186	1,301	1,933	2,471	2,710	4,027	91.2	61.4
Poland . . . .	2,928	2,982	2,984	98.2	98.1	30,424	30,883	32,640	63,384	64,341	68,001	98.5	93.2
Portugal . . . .	...	192	174	...	...	690	1,151	937	1,438	2,398	1,953	60.0	73.7
Rumania . . . .	4,485	4,416	4,676	101.6	95.9	41,182	32,345	41,001	85,798	67,387	85,421	127.3	100.4
Sweden . . . .	279	293	306	95.2	90.9	4,226	5,234	4,939	8,805	10,904	10,290	80.7	85.6
Switzerland . . . .	17	17	17	98.8	99.8	295	285	270	615	593	562	103.8	109.5
Czechoslovakia . . . .	1,639	1,759	1,760	93.2	93.1	29,774	33,177	28,228	62,031	69,121	58,809	89.7	105.5
Yugoslavia . . . .	1,059	1,006	1,025	105.3	103.3	10,208	8,631	8,452	21,268	17,982	17,609	118.3	120.8
Total Europe . . . .	§) 26,720	27,191	27,207	98.3	98.2	345,966	349,684	328,176	720,778	728,523	683,717	98.9	105.4
*U. S. S. R. w) . . . .	711	872	1,009	81.6	70.5	...	...	...	...	...	...	...	...
Canada . . . .	3,658	3,758	4,728	97.3	77.4	30,594	38,771	51,665	63,737	80,773	107,637	78.9	59.2
United States . . . .	10,000	13,300	11,947	75.2	83.7	74,928	144,960	130,034	156,100	302,000	270,905	51.7	57.6
Total North Amer. . . .	13,658	17,058	16,675	80.1	82.0	105,522	183,731	181,699	219,837	382,773	378,542	57.4	58.1



COUNTRIES	†) AREA						†) PRODUCTION							
	1933	1932	Average	%	1933		1933	1932	Average	1933	1932	Average	%	1933
	—	—	to 1931	—	1933/34		—	—	to 1931	—	—	to 1931	—	1933/34
	1933/34	1932/33	1927/28	1932	Aver.		1933/34	1932/33	1927/28	1933/34	1932/33	1927/28	1932	Aver.
	1,000 acres						1,000 centals						1932/1933 = 100	
Korea . . . . .	2,501	2,446	2,297	102.3	108.8		20,979	21,161	18,124	43,708	44,086	37,759	99.1	115.8
Japan . . . . .	1,940	2,107	2,198	92.1	88.2		32,152	37,316	37,758	66,984	77,744	78,664	86.2	85.2
Syria a. Lebanon	759	794	824	95.0	89.6		6,045	4,463	8,701	12,594	9,299	18,127	135.4	69.5
Turkey . . . . .	3,020	3,401	3,266	88.8	92.5		28,660	25,750	28,156	59,710	53,647	58,617	111.3	101.9
Total Asia . . . .	8,200	8,748	8,585	93.7	95.5		87,836	88,690	92,719	182,996	184,776	193,167	99.0	94.7
Algeria . . . . .	3,277	3,339	3,427	98.1	95.6		15,611	14,833	17,277	32,523	30,902	35,995	105.2	90.4
Egypt . . . . .	292	366	359	79.9	81.5		4,434	5,792	5,340	9,237	12,067	11,126	76.5	83.0
Eritrea . . . . .	69	99	52	70.0	132.1		432	617	167	900	1,286	347	70.0	259.3
French Morocco . .	3,439	3,298	3,008	104.3	114.3		23,060	22,650	21,725	48,042	47,147	45,261	101.9	108.1
Tunis . . . . .	927	1,507	1,197	61.5	77.4		2,646	7,496	4,010	5,512	15,616	8,355	35.3	66.0
Total Africa . . .	8,004	8,609	8,043	90.0	99.5		46,183	51,368	48,519	96,214	107,018	101,084	89.9	95.2
Argentina . . . . .	4) 1,782	4) 1,520	4) 1,368	117.2	130.2		16,976	15,432	7,803	35,367	32,151	16,256	101.0	217.6
*Uruguay . . . . .	10	10	10	101.0	104.0		...	...	74	...	...	153	...	...
GRAND TOTALS . .	\$) 58,364	63,126	61,878	92.5	94.3		602,483	688,905	658,916	1,255,192	1,435,241	1,372,766	87.5	91.4

OATS.														
	1933	1932	Average	%	1933		1933	1932	Average	1933	1932	Average	%	1933
	—	—	to 1931	—	1933/34		—	—	to 1931	—	—	to 1931	—	1933/34
	1933/34	1932/33	1927/28	1932	Aver.		1933/34	1932/33	1927/28	1933/34	1932/33	1927/28	1932	Aver.
	1,000 acres						1,000 centals						1932/1933 = 100	
Germany . . . . .	7,863	8,117	8,578	96.9	91.7		153,246	146,613	143,683	478,890	458,163	449,005	104.5	106.7
Austria . . . . .	755	784	759	96.8	99.5		11,995	10,020	9,192	37,485	31,312	28,726	122.0	130.5
Belgium . . . . .	733	712	694	102.9	105.6		16,348	16,763	14,894	51,088	52,385	46,544	97.5	109.8
Bulgaria . . . . .	331	281	330	117.7	100.4		3,432	2,488	2,348	10,723	7,777	7,339	137.9	146.1
*Denmark . . . . .	936	984	977	95.1	95.8		...	23,267	21,650	...	72,707	67,655	...	...
Spain . . . . .	1,599	1,926	1,926	83.0	83.0		12,415	18,309	13,588	38,798	57,215	42,461	67.8	91.4
Estonia . . . . .	343	356	357	96.2	95.9		2,493	2,869	2,943	7,789	8,966	9,197	86.9	84.7
*Irish Free State . .	650	632	645	102.8	100.7		...	14,049	14,100	...	43,904	44,062	...	...
Finland . . . . .	1,110	1,124	1,106	98.7	100.4		13,193	14,759	13,291	41,226	46,122	41,535	89.4	99.3
France . . . . .	8,366	8,371	8,547	99.9	97.9		125,685	106,221	106,172	392,762	331,938	331,785	118.3	118.4
Engl. and Wales . .	1,494	1,580	1,759	94.6	84.9		27,462	28,022	30,863	85,820	87,570	96,446	98.0	89.0
Scotland . . . . .	856	867	872	98.7	98.1		15,546	16,710	14,999	48,580	52,220	46,872	93.0	103.6
*N. Ireland . . . .	288	286	305	100.8	94.5		...	6,464	6,014	...	20,201	18,792	...	...
Greece . . . . .	324	304	293	106.8	110.8		3,050	2,325	1,615	9,533	7,266	5,048	131.2	188.8
Hungary . . . . .	572	578	649	99.0	88.2		6,973	6,962	7,021	21,791	21,756	21,940	100.2	99.3
Italy 1) . . . . .	1,110	1,103	1,238	100.6	89.6		12,706	13,302	13,036	39,706	41,568	40,738	95.5	97.5
Latvia . . . . .	758	802	736	94.5	103.0		7,291	7,121	5,941	22,783	22,252	18,465	102.4	122.7
Lithuania . . . . .	848	922	820	92.0	103.5		7,957	7,857	7,830	24,865	24,553	21,569	103.1	101.6
Luxemburg . . . . .	69	69	72	100.6	95.0		1,173	1,018	951	3,665	3,182	2,970	115.2	123.4
Norway . . . . .	242	235	240	103.3	100.9		3,950	4,265	3,879	12,342	13,328	12,121	92.6	108.8
Netherlands . . . .	337	350	376	96.3	89.8		6,640	6,693	7,165	20,751	20,916	22,392	99.2	92.7
Poland . . . . .	5,444	5,487	5,224	99.2	104.2		54,013	52,709	53,999	168,791	164,714	168,747	102.5	100.0
Portugal . . . . .	...	459	445	...	...		1,164	2,354	1,937	3,636	7,355	6,052	49.4	60.1
Rumania . . . . .	2,050	1,956	2,655	104.8	77.2		18,087	14,169	22,199	56,521	44,276	69,372	127.7	81.5
Sweden . . . . .	1,541	1,579	1,681	97.6	91.7		20,624	26,191	24,617	64,451	81,845	76,927	78.7	83.8
Switzerland . . . .	40	41	49	98.7	82.2		761	776	859	2,377	2,425	2,685	98.0	88.5
Czechoslovakia . .	1,976	2,020	2,070	97.9	95.5		34,770	36,681	30,540	108,655	114,628	95,437	94.8	113.8
Yugoslavia . . . . .	929	810	950	114.8	97.9		8,180	5,935	6,873	25,563	18,548	21,478	137.8	119.0
Total Europe . . .	\$) 40,149	40,833	42,426	98.3	94.6		569,154	551,132	540,435	1,778,591	1,722,280	1,688,851	103.3	105.3
Canada . . . . .	13,529	13,138	12,997	103.0	104.1		105,846	133,131	130,976	330,769	416,034	409,297	79.5	80.8
United States . . .	36,500	41,400	39,590	88.2	92.2		231,200	398,912	379,047	722,500	1,246,600	1,184,522	58.0	61.0
Total North Amer. .	50,029	54,538	52,587	97.1	95.1		337,046	532,043	510,023	1,053,269	1,662,634	1,593,819	63.4	66.1
Syria and Lebanon	28	28	35	101.8	80.6		288	298	238	899	931	743	96.3	121.0
Turkey . . . . .	399	294	350	135.6	113.9		3,748	2,778	2,408	11,712	8,681	7,526	134.9	155.6
Algeria . . . . .	521	488	592	106.9	88.1		2,842	2,786	4,138	8,882	8,707	12,932	102.0	68.7
French Morocco . .	74	56	83	131.1	88.6		668	405	673	2,086	1,267	2,105	164.7	99.1
Tunis . . . . .	51	54	104	94.1	49.0		441	617	789	1,378	1,929	2,466	71.4	55.9
Total Africa . . .	646	598	779	108.3	82.9		3,951	3,808	5,600	12,346	11,903	17,503	103.7	70.6
Argentina . . . . .	4) 3,566	4) 3,652	4) 3,595	97.6	99.2		18,607	22,267	20,462	58,147	69,583	63,944	83.6	90.9
*Uruguay . . . . .	74	146	150	119.5	116.1		...	...	908	...	...	2,837	...	...
GRAND TOTALS . .	\$) 94,817	99,943	99,772	94.9	95.0		932,794	1,112,326	1,079,166	2,914,964	3,476,012	3,372,386	83.9	86.4

†) The two dates mentioned refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — \* Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area are not yet available. — w) Autumn crops. — r) Spring crops. — 1) The figures from 1931 have been recalculated taking into account the results of the new agricultural survey. — 2) Including spelt and meslin. — 3) European crops only. — 4) Area sown. — 5) Barley and meslin.

*Latvia* : During the first half of November fluctuations in temperature were fairly normal, whereas during the latter half there was a very large fall in temperature. Precipitation during November was above the normal. Towards mid-November the crop condition of winter rye was average in 22.4 % of correspondents' replies, above the average in 74.8 % and below it in 2.8 %. The corresponding figures for winter wheat were : 29.9 %, 66.4 % and 3.7 %.

*Lithuania* : During November weather conditions favoured the sowing of winter cereals, which had been completed at the end of October in good condition. At mid-November, the soil was frozen under snow. A fairly low temperature ( $-10^{\circ}$  to  $-15^{\circ}$  c), was maintained without considerable change until the end of the month. Precipitation was not very large. Germination was regular.

*Rumania* : In the third week of November the weather permitted a continuation of sowings of winter cereals. Temperature fell sharply in the last week of November, the soil froze and in many areas there was a fall of snow.

Early sowings germinated normally and developed well. The areas sown to winter cereals up to 15 November are officially estimated as follows : winter wheat : 3,818,000 acres (against 4,813,000 and 4,296,000 at the same date in 1932 and 1931 respectively) winter rye 532,000 (582,000; 521,000); winter barley 99,000 (136,000; 144,000). To enable these figures to be properly interpreted it should be noted that they do not represent the results of the whole autumn sowing season and that, owing to the difference in method of estimate, they are not comparable with the final date for preceding years.

*Czechoslovakia* : The revised figure of spelt production this year is 15,400 centals, a decrease of 30.8 % on last year (22,300) and an increase of 109 % compared with the average of the preceding five years (7,400).

The figure for mixed grain is 274,000 centals, a decrease of 4.2 % on last year (286,000) and of 9.9 % compared with the average of the preceding five years (304,000).

*Yugoslavia* : The abundance of rain during November did not hinder work for the winter sowings. The wet ground was, in fact, favourable for preparatory work for the winter sowings, which, thanks to adequate warmth and soil moisture, came up under good conditions.

During November snow fell abundantly in the mountains; towards the end of the month the plains also had a snow cover and temperature fell considerably.

*U. S. S. R.* : In the latter half of November and the first decade of December cold weather predominated and in many districts there were exceptionally severe falls of temperature. Toward the end of the first decade of December snow covered almost the whole territory of the Union save Transcaucasia and the southern parts of Central Asia. In the west the snow cover attained a depth of 3.5 cm. (1-2 inches); a depth of up to 12 cm. (5 inches) was noted in the Moscow region, in the Middle Volga and in the more northerly regions, where 20 cm. (8 inches) was attained. The snow-cover was uniform.

*Argentina* : The first official estimates are now available. For wheat a production 8.8 % above that of last year and 2.8 % above the five-year average is expected.

Given the increase of 741,000 acres in the estimate of area sown to 19,670,000 acres, the yield is calculated at 7.9 cents (14.0 bushels) per acre, one of the best unit yields recorded in recent years. Of the other cereals only barley shows a large outturn, while rye and oats show a small outturn.

*United States* : On 29 November rains were needed rather generally in the winter wheat States, especially in the West, where much wheat had not yet germinated. Condition was good in the Ohio Valley and the plant was well rooted but many plants were small. In the western two-thirds of Kansas little progress was made but condition in the eastern third ranged from fair to good. Further sowing had been delayed in California, awaiting additional rains. In the week ended on 6 December precipitation was generally insufficient in the East. Crop condition was fair to good in the Ohio Valley but moisture was needed in Western parts. In the Western belt rains were beneficial but more were needed. On the Pacific Coast night frosts stopped growth in part but rains were beneficial in others. In the following week a cold wave occurred but little damage was reported.

*Cyprus* : It was reported in mid-November that wheat sowing had been delayed by drought. Barley sowing on dry land was progressing but rain was urgently required.

*Japan* : Favoured by the weather, germination of barley and oats was regular.

*Syria and Lebanon* : The rains in October allowed sowing to be made under normal or good conditions in Latakia, Lebanon and Jebel Druze.

*Algeria* : There was rain in mid-November in the centre and east permitting sowing to be made in excellent conditions in Oran and in average conditions in Algiers, where the lands prepared were also fully sown. On the other hand the department of Constantine had a quite insufficient precipitation, especially in the eastern and southeastern districts where sowings were carried out with great difficulty.

Sprouting was regular in the majority of areas in Algiers, where condition of the sowings was satisfactory save in the case of the earlier sowings, which were infested by weeds. Drought hindered sprouting of October sowings in Oran and made germination difficult and irregular in the east and southeast of Constantine.

*Cyrenaica* : Preparatory work for the autumn sowings was carried out under good conditions; the autumn rains were late this year and delayed the sowings so that forecasts are not very satisfactory. In some areas the seed was put in dry soil and the damage caused by birds is considerable.

*Egypt* : Early sowing of wheat began slightly late in Lower and Middle Egypt owing to delay in the opening of late bolls in the cotton crop and consequent retention of the cotton sticks. Early sowings terminated about the middle of the month. General sowings continue over half the area in Lower Egypt and one-third in Middle Egypt being sown so far. In Upper Egypt the area sown exceeds 75 % of the area devoted to the crop. Germination and growth are satisfactory. Sowing of barley was over in early areas and was still progressing in normal areas. Germination and growth were satisfactory.

*Tunisia* : The rains of the first half of November in the centre and south and in the second half of the month throughout the country favoured sowings, which

sprouted vigorously everywhere after the beginning of the rains. At the end of November sowings were still late in the north, especially amongst the natives, and had begun to suffer from the excessive moisture; in the centre they were almost at an end and, though the lack of rains had not till then permitted normal sowings, the situation had been restored; in the south the winds in the second half of the month caused further desiccation of the ground and sowings were slowed down. Such sowings as were made generally sprouted under good conditions.

*Union of South Africa*: The reduction in the November estimate of wheat production with respect to the previous estimate was due to the continuance of the drought during October. Reductions were recorded throughout the Union. Beneficial rains fell in parts of the southwestern and south coast districts of Cape Province and were of considerable value to growing crops. Most farmers in these districts were busy harvesting.

*Australia* (Telegram of 15 December): In Western Australia harvesting is in full swing and results are better than expected. In South Australia and Victoria damage is reported consequent on excessive rain; district reports vary but an average yield is expected. In New South Wales the weather has been very unfavourable, excessive rain having damaged the crop and rather poor yields being expected.

## MAIZE

*France*: As was expected the crop is distinctly small and scarcely larger than that of last year; it is, however, much above the very small crops of the last decennium.

The results of the millet and buckwheat crops are as follows:—

	1933	1932	Average 1927-31	% 1933 1932 = 100	Aver. = 100
<i>Area</i> (000 acres)					
Buckwheat . . . . .	778	814	820	95.5	94.8
Millet . . . . .	33	33	40	99.3	81.7
<i>Production</i> (000 centals)					
Buckwheat . . . . .	6,705	8,223	7,925	81.5	84.6
Millet . . . . .	180	220	252	81.8	71.5

*Hungary*: Toward 20 November harvesting was terminated in the majority of departments. Due to the rainy weather there were, however, areas where harvesting was still in progress at the date indicated. Quality is generally poor this year.

*Yugoslavia*: Abundant rainfall during the last ten days of October and the whole of November, that is, during the period of harvesting of maize, have had an unfavourable influence on the quality of the product, the moisture content of which is fairly

high. Prices of new crop maize are for this reason less firm and have a tendency to fall in relation to those of old crop maize, which is in good demand by foreign purchasers.

*Egypt.* Harvesting of normal *nili* maize areas in Lowr Egypt is in progress. In Upper Egypt, however, harvesting has begun in early areas only. The infestation by *aphis*, which has spread throughout late areas in Lower Egypt causing appreciable damage and increasing the number of plants without grain, has now diminished. The damage had spread generally in Middle Egypt, where the crop is expected to decrease greatly. The average yield of the whole crop is about 6 % below normal.

*Maize.*

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Average							1932	Average
			= 100	= 100	= 100			= 100					
1,000 acres					1,000 centals					1,000 bushels of 56 lbs			
Austria . .	160	165	145	97.3	110.9	3,049	2,914	2,639	5,445	5,204	4,712	104.6	115.6
Bulgaria . .	1,762	1,829	1,726	96.3	102.1	22,996	23,246	16,098	41,064	41,511	28,747	98.9	142.8
Spain . . .	1,059	1,102	1,053	96.0	100.5	12,362	15,280	14,245	22,076	27,286	25,438	80.9	86.8
France . . .	839	840	848	99.9	98.9	9,245	9,025	11,031	16,509	16,116	19,699	102.4	83.8
Greece . . .	1) 687	654	521	105.0	131.7	4,206	4,707	3,386	7,511	8,406	6,046	89.4	124.2
Hungary . .	2,862	2,905	2,670	98.5	107.2	38,951	53,617	34,016	69,556	95,746	60,743	72.6	114.5
Italy 2) { s)	3,189	3,255	3,446	98.0	92.6	52,530	61,885	47,773	93,804	110,510	85,309	84.9	110.0
*Poland . .	342	322	230	106.1	148.4	...	4,569	2,199	...	8,159	3,926	...	...
Rumania . .	225	240	227	94.1	99.3	...	2,331	2,018	...	4,163	3,603	...	...
Switzerland .	11,928	11,803	11,195	101.1	106.6	103,618	132,123	102,555	185,032	235,934	183,134	78.4	101.0
Czechoslov..	2	3	3	98.7	86.7	60	62	75	106	110	135	96.4	78.9
Yugoslavia .	316	331	347	95.5	91.1	3,093	6,819	5,248	5,522	12,176	9,371	45.4	58.9
—	6,468	6,488	5,893	99.7	109.8	80,593	105,667	65,007	143,916	188,692	116,083	76.3	124.0
Canada . .	137	130	143	95.4	95.7	2,608	2,832	2,908	4,658	5,057	5,192	92.1	89.7
United Stat.	102,200	108,700	100,519	94.0	101.7	1,304,900	1,627,900	1,406,123	2,330,200	2,907,000	2,510,933	80.2	92.8
Syria & Leb.	66	61	96	109.8	69.3	593	759	1,091	1,059	1,355	1,948	78.1	54.3
Turkey . . .	864	830	798	104.1	108.2	9,921	9,414	9,396	17,716	16,810	16,779	105.4	105.6
Algeria . .	20	20	24	98.0	83.7	110	122	146	197	217	260	90.5	75.6
Egypt . . .	1,639	2,043	2,071	80.2	79.2	30,468	42,591	42,314	54,407	76,055	75,561	71.5	72.0
Eritrea . .	10	7	18	133.3	56.3	88	66	138	157	118	247	133.3	63.7
Kenya 4) . .	132	164	195	80.5	67.6	2,188	2,279	2,584	3,908	4,070	4,614	96.0	84.7
Tunis 5) . .	37	44	41	83.3	89.7	143	121	117	256	217	209	118.2	122.6
TOTALS . .	134,377	141,374	131,752	95.0	102.0	1,681,722	2,101,429	1,768,800	3,003,099	3,752,590	3,155,180	80.0	95.2

\* Countries not included in the totals. — s) Spring crop (maggengo). — i) Summer crop (cinquantino). — 1) Calculated, unofficial figure. — 2) The figures from 1931 have been calculated taking into account the results of the new agricultural survey. — 3) Not including the southern districts of Syria. — 4) European crop. — 5) Maize and sorghum.

*Union of South Africa:* The condition of the oxen in the eastern Transvaal highveld and elsewhere as a result of the prolonged drought was so poor at the end of October that they were not fit for ploughing. The prospects for the coming maize crop were therefore very poor unless special measures were to be taken to overcome this difficulty.

## RICE

*Argentina*: In October sowing was in full swing in the principal producing areas and area was expected to be above that of last year, which was estimated at 33,100 acres.

*British Guiana*: Weather has been favourable and it was expected at the beginning of November that production would amount to 112 million pounds. The market was fairly active.

*Formosa*: Growth of rice is fairly good. Consequent on lack of rain slight damage is reported.

## Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE								
	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		1933/34	1932/33	Average 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34		
				1932/ 1933	Aver- age							1932/ 1933	Aver- age	
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100		
Bulgaria . .	14	13	18	107.4	77.8	297	304	349	661	675	776	98.0	85.1	
Spain . . .	116	123	119	94.8	98.0	6,531	7,016	6,546	14,514	15,591	14,546	93.1	99.8	
Italy 1) . .	316	335	346	94.5	91.4	13,400	14,477	14,611	29,776	32,169	32,468	92.6	91.7	
United Stat.	769	868	952	88.6	80.8	16,020	18,180	19,776	35,600	40,400	43,947	88.1	81.0	
Korea . . .	4,160	3,824	3,965	108.8	104.9	72,779	64,297	63,443	161,727	142,879	140,981	113.2	114.7	
Formosa { 2)	707	700	640	101.0	110.5	15,296	16,830	13,090	33,991	37,399	29,089	90.9	116.9	
India 4) { 3)	961	941	836	102.1	114.9	18,355	18,849	14,839	40,788	41,885	32,974	97.4	123.7	
Indo-China:	74,994	75,132	74,586	99.8	100.5	—	—	—	—	—	—	—	—	
Annam { 5)	946	981	1,042	96.5	90.8	8,598	7,716	7,953	19,106	17,147	17,673	111.4	108.1	
Cochin-China { 6)	1,421	1,176	1,450	120.8	98.0	14,551	14,771	11,618	32,334	32,824	25,817	98.5	125.2	
Laos . . .	5,189	5,066	5,177	102.4	100.2	—	44,754	47,635	—	99,451	105,854	—	—	
Tonkin 7) . .	1,137	1,137	1,118	100.0	101.7	—	7,716	7,584	—	17,147	16,853	—	—	
Japan . . .	1,184	1,179	1,303	100.4	90.8	13,955	13,073	15,687	31,011	29,052	34,860	106.7	89.0	
Siam { 8)	7,867	7,983	7,874	98.5	99.9	262,984	240,764	242,437	584,396	535,020	538,737	109.2	108.5	
Syria & Leb. { 9)	6,749	6,687	—	100.9	—	—	—	—	—	—	—	—	—	
Egypt . . .	(4,008)	(3,535)	—	(113.4)	—	—	—	—	—	—	—	—	—	
	1	1	10	151.9	224.0	11	13	7	7	11	29	16	15	184.6
	438	489	291	89.5	150.6	11,707	12,135	7,984	26,014	26,966	17,743	96.5	146.6	

1) The figures from 1931 have been calculated taking into account the results of the new agricultural survey. — 2) First crop. — 3) Second crop. — 4) First forecast. — 5) First semester. — 6) Second semester. — 7) Rice of the fifth month. — 8) Area planted in 317 districts of the whole Kingdom, including the 35 provinces of the Inner Circles, as at the end of September. — 9) Area planted in the 35 Provinces of the Inner Circles as at the end of August. — 10) Area inferior to 500 acres. — 11) Not including the southern districts of Syria.

*India*: For Burma the second provincial forecast shows an increase in the total area sown and in the area likely to mature with respect to the figures of the first forecast for 1933-34 and, to a still greater extent, to the corresponding estimates of 1932-33. The current season's figures for all-Burma are now 12,769,600 acres sown against 12,517,200 in the corresponding estimate for last year, 192,800 acres destroyed against 178,200 acres, 12,576,800 acres likely to mature against 12,339,000. The corresponding

figures for Lower Burma alone are 9,724,800 (9,687,400) sown, 90,700 (74,800) destroyed, 9,634,100 (9,612,600) likely to mature. In mid-November the crop in Lower Burma was in good condition and a normal outturn was expected. In Upper Burma a good outturn was expected from the irrigated areas but at the beginning of November unirrigated areas needed more rain.

In Bengal the first intermediate report showed little change on the conditions indicated in the preliminary forecast. In the last two decades of November and the first week of December the weather was dry. Harvesting of winter padi was continuing. Prospects for standing crops were satisfactory.

In Bihar and Orissa the *hathia* rains were somewhat irregular. The winter rice crop, which is the larger, was estimated in the first intermediate forecast at 86 % of the ten-year average and the autumn crop at 100 %. In the latter half of November and the first days of December light rain fell in some districts. There was some insect damage in Sambalpur. Condition of standing crops at the beginning of December was good. Harvesting of winter padi was proceeding and threshing has commenced. Sowing of *dahua* padi had begun in Cuttack and Puri by the end of November.

In Madras the yield of first crop padi was on the whole slightly below normal owing to the heavy rains during harvesting. In the first two decades of November rainfall was on the whole moderate but in the last decade it was below normal. In the first days of December standing crops were in fair condition save in the Carnatic and north Arcot, where shortage of rain had been experienced. Sowing and transplanting were proceeding.

According to the first intermediate report crop condition in the United Provinces had been improved by satisfactory rains.

Clear, cool weather prevailed in the Central Provinces in November and the first days of December though conditions were warmer and cloudier in the middle of November. In the first intermediate report an outturn above normal was expected. Harvesting and threshing continued.

In Assam conditions up to 11 December had been seasonable save in certain districts where drought and insect damage had been experienced. Crop prospects and outturn have been fair.

In Bombay, according to the first intermediate report, the crop was doing well in Gujarat, the previous heavy rainfall having ceased. In Konkan rains were fairly heavy in October, checking harvesting and damaging the crop in some areas. In the Deccan good progress had been made in the north but untimely rains in October and in places attacks by beetles had damaged the crops in the south. In northern Sind conditions had been generally satisfactory. Diseases and pests had subsided considerably. Early varieties had been harvested and late varieties were attaining maturity.

*British Malaya* : Except in Kedah, Province Wellesley and Penang, where it was well up to average, rainfall in October was below average, especially in Selangor, Negri Sembilan, Kelantan and Pahang. On the east side of the Peninsula the northeast monsoon was late, not having broken at the close of the month though its influence was felt in the northwestern area.

Planting was nearing completion in most parts of the Peninsula, though much work remained to be done in several important areas, including parts of Kelantan, where unusually dry conditions caused delay. Prospects for the harvest were very promising in Kedah, Province Wellesley, Krian, Malacca and parts of Pahang. Crabs have proved troublesome in Kedah and Province Wellesley and rats in Johore and Negri Sembilan.

Two new rice mills have commenced work in Kedah.

*Egypt*: Harvesting of *seft* rice is over. The crop is considered to be 3 % above the average. Harvesting of early-sown areas of *nili* rice is over but that of normal areas is still in progress. The crop is expected to be slightly below the average.

## POTATOES

There are at present available statistical data of potato production in the principal producing countries. The figure of French production received by the Institute while the November Crop Report was in the press confirmed the rather

### Potatoes.

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Average							1932	Average
			= 100	= 100	= 100			= 100					
1,000 acres	1,000 centals	1,000 bushels of 60 lbs											
Germany (e)	606	624	593	97.1	102.2	66,489	61,789	62,078	110,814	102,980	103,462	107.6	107.1
Austria (m)	6,532	6,490	6,388	100.7	102.3	895,291	966,668	863,260	1,492,123	1,611,082	1,438,738	92.6	103.7
Belgium	519	500	467	103.8	111.2	58,670	58,777	58,765	97,781	97,960	97,940	99.8	99.8
Bulgaria	404	435	415	92.7	97.2	79,226	97,864	76,679	132,041	163,103	127,797	81.0	103.3
Spain	37	37	29	100.0	128.9	1,698	2,134	1,000	2,829	3,556	1,667	79.6	169.7
Estonia	976	1,033	889	94.5	109.8	91,411	110,799	92,242	152,348	184,662	153,734	82.5	99.1
* Irish F. State	169	166	165	102.1	102.5	19,513	17,258	16,374	32,521	28,762	27,289	113.1	119.2
Finland	352	348	357	101.3	98.7	...	67,545	53,607	...	112,576	89,343	...	...
France	200	190	176	105.2	113.6	27,337	21,680	17,978	45,561	36,133	29,963	126.1	152.1
Engl. a. W.	3,409	3,492	3,573	97.6	95.4	331,230	363,410	331,525	552,040	605,671	552,531	91.1	99.9
Scotland	518	504	479	102.8	108.3	77,907	74,099	68,777	129,845	123,499	114,626	105.1	113.3
* N. Ireland	153	149	137	103.0	111.3	24,125	25,581	20,366	40,208	42,635	33,943	94.3	118.5
Greece, (e)	139	142	146	98.0	95.1	...	25,218	21,906	...	42,031	36,509	...	...
Hungary	46	38	27	121.4	171.6	899	1,865	962	1,499	3,109	1,604	48.2	93.4
Italy 2)	735	738	674	99.6	109.0	41,379	34,336	39,386	68,963	57,226	65,642	120.5	105.1
Latvia	986	1,022	871	96.4	113.2	52,376	62,544	41,277	87,292	104,238	68,793	83.7	126.9
Lithuania	257	253	216	101.7	118.9	30,921	26,569	19,323	51,534	44,280	32,204	116.4	160.0
Luxembourg	441	428	356	103.1	123.8	37,620	42,302	34,534	62,699	70,503	57,556	88.9	108.9
Malta	41	41	40	99.8	100.3	3,977	4,854	4,078	6,628	8,091	6,796	81.9	97.5
Norway	7	7	7	95.6	97.9	451	564	645	752	941	1,075	80.0	70.0
Netherlands	120	123	119	97.3	100.7	20,564	22,818	17,620	34,273	38,029	29,366	90.1	116.7
Poland	379	435	425	87.1	89.3	60,032	81,130	72,255	100,051	135,215	120,423	4.0	83.1
* Rumania	6,792	6,709	6,410	101.2	106.0	621,706	660,827	652,888	1,036,155	1,101,357	1,088,125	94.1	95.2
Sweden	484	471	491	102.8	98.7	...	35,488	33,773	...	59,145	72,954	...	...
Switzerland	327	338	340	96.7	96.0	37,898	47,039	34,432	63,161	78,397	57,386	80.6	110.1
Czechoslovakia (e)	117	115	116	101.9	101.1	16,700	14,438	15,368	27,833	24,063	25,613	115.7	108.7
...	96	94	79	102.0	121.1	6,832	7,533	6,612	11,387	12,555	11,020	90.7	103.3
...	1,735	1,718	1,695	101.0	102.4	169,586	196,975	206,441	282,637	328,286	344,062	86.1	82.1
Canada	528	521	574	101.2	92.0	41,542	39,416	47,426	69,237	65,693	79,041	105.4	87.6
United States	3,200	3,368	3,208	95.0	99.7	190,260	214,800	220,269	317,100	358,000	367,116	88.6	86.4
* Syria a. Leb.	17	18	17	92.3	96.5	...	790	1,091	...	1,317	1,819	...	...
Algeria (m)	31	25	26	125.1	120.1	1,102	1,015	937	1,837	1,691	1,561	108.6	117.7
TOTALS	29,361	29,593	28,494	99.2	103.0	3,006,741	3,259,084	3,023,487	5,011,149	5,431,717	5,039,073	92.3	99.4

\* Countries not included in the totals. — *e*) Winter, so-called early, potatoes. — *m*) Main season crop. — *r*) Unofficial estimate (calculated). — *2*) The figures from 1931 have been calculated taking into account the results of the new agricultural survey.



pessimistic information previously communicated. In fact, the 1933 crop, though practically attaining the five-year average (99.9 %) remains almost 9 % below the high figure of last year. The data for less important producing countries is comprised in the table.

In Lithuania the excessive precipitation of October reduced production, which, though above the average, remains about 11 % below the large crop of last year. Italy also announces a good outturn exceeding the five-year average by almost 27 %. While the 1933 crop represents only 83.7 % of last year's this is because the latter was very abundant, approximating to the high figure of 1929, when 64,823,000 centals (108,036,000 short tons) were obtained. Other countries have made slight modifications on their previous estimates. Hungary has made a reduction of about 3.5 million centals (5.9 million short tons). Latvia has raised its figure to 5.3 (8.8) million so that the 1933 crop constitutes the maximum so far attained for the country.

On general lines the opinion formulated in the Crop Report of October is confirmed. The excessive drought in July and part of August reduced the production in some of the large producing countries, particularly in Czechoslovakia and France.

In the countries for which data are available (excluding the U. S. S. R.) the figure for production in 1933, which can hardly undergo a further appreciable modification, remains 7.7 % below the large one of 1932 and is almost the same as the five-year average (— 0.5 %.)

*Unit-yields in certain of the principal producing countries.*

Countries	1933	1932	Average 1927-1931
	(Centals per acres)		
Germany . . . . .	134.8	144.5	132.6
Poland . . . . .	91.5	98.5	101.9
France . . . . .	97.2	104.1	92.8
Czechoslovakia . . . . .	96.4	112.9	120.1
United States . . . . .	59.2	63.7	68.7
Spain . . . . .	93.7	107.2	103.7
Belgium . . . . .	196.7	225.0	184.7
United Kingdom . . . . .	150.2	147.0	143.5
Netherlands . . . . .	158.8	186.6	170.0
Hungary . . . . .	56.4	46.5	58.3
Italy . . . . .	53.1	61.1	47.5
Canada . . . . .	78.6	75.6	82.7

Countries	1933	1932	Average 1927-1931
		(Bushels per acre)	
Germany . . . . .	224.7	240.9	221.0
Poland . . . . .	152.6	164.2	169.8
France . . . . .	161.9	173.5	154.6
Czechoslovakia . . . . .	160.6	188.2	200.1
United States . . . . .	98.7	106.2	114.5
Spain . . . . .	156.1	178.7	172.8
Belgium . . . . .	327.9	375.0	307.8
United Kingdom . . . . .	250.2	245.0	239.1
Netherlands . . . . .	264.7	310.9	283.3
Hungary . . . . .	94.0	77.5	97.2
Italy . . . . .	88.5	101.9	79.1
Canada . . . . .	131.0	125.9	137.8

\* \* \*

*France*: Production was, as expected, hardly average. Amongst the principal centres of production only Brittany and some departments of the Central Plateau, along with the Jura and the Garonne basin had yields above those of last year. The decrease is on the other hand large in the Loire basin, Poitou, Anjou, the Rhône valley, the Paris basin and the East.

Production of Jerusalem artichokes is also smaller, as the following figures show:

	1933	1932	Average 1927-31	% 1933 1932 = 100	Av. 1933 = 100
Area (ooo acres) . . . . .	337	323	337	104.4	100.0
Production (ooo centals.) . . . .	48,491	53,598	51,130	90.5	94.8

*Great Britain and Northern Ireland*: In England and Wales the weather during the greater part of November was open and favourable for agricultural operations. The lifting and clamping of the potato crop was generally completed during the month. Tubers are smaller than usual but of good quality and should keep well. So far very little disease has been reported.

In Scotland potato lifting was finished during the month of October under satisfactory conditions.

*Lithuania*: The weather conditions have been favourable for the lifting of potatoes.

*Cyprus*: Yields have been satisfactory on the whole and at the middle of November the demand for export was already considerable.

*Algeria*: Planting of early potatoes was carried out in November on the coastal slopes sprouting was regular and vigorous.

*Tunisia*: The rains of November were adequate to assure germination and growth in the north and allowed planting to begin in the centre.

## SUGAR

In the few European sugar-producing countries in which lifting had not been terminated weather was generally favourable.

The estimates of sugar production published in the previous Crop Report have undergone few and only slight changes. The only figure that was lacking in the table, that of the U. S. S. R., has been inserted, while that of last year

*Sugar-beet.*

COUNTRIES	AREA					PRODUCTION							
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933	
				1932	Average							1932	Average
			= 100		= 100			= 100			= 100		
1,000 acres		1,000 centals		1,000 short tons									
Germany . .	751	669	1,091	112.3	68.9	170,809	173,628	259,767	8,540	8,681	12,988	98.4	65.8
Austria . .	115	105	81	108.9	142.4	23,656	22,495	18,035	1,183	1,125	902	105.2	131.2
Belgium . .	131	132	149	99.1	88.1	35,058	38,274	38,414	1,753	1,914	1,921	91.6	91.3
Bulgaria . .	27	28	45	97.3	60.2	4,098	3,882	5,893	205	194	295	105.6	69.5
*Denmark . .	106	94	91	113.1	117.0	...	31,581	22,649	...	1,579	1,132	...	...
Spain . . .	193	209	185	92.1	104.1	49,604	44,859	42,920	2,480	2,243	2,146	110.6	115.6
Finland . .	7	6	5	116.0	128.6	1,102	1,110	847	55	56	42	99.3	130.1
France . . .	649	658	644	98.6	100.6	144,525	167,338	151,187	7,226	8,367	7,559	86.4	95.6
Engl. a. W.	364	255	242	142.7	150.5	67,200	49,874	42,613	3,360	2,494	2,131	134.7	157.7
*Scotland . .	2	1	3	300.7	62.4	...	114	374	...	6	19	...	...
Hungary . .	108	105	167	103.5	64.6	20,761	18,717	30,545	1,038	936	1,527	110.9	68.0
Italy 1) . .	202	207	268	97.3	75.4	47,315	55,001	58,744	2,366	2,750	2,937	86.0	80.5
*Latvia . . .	32	20	—	157.0	—	3,968	—	—	198	—	—	—	—
*Lithuania . .	10	13	—	75.5	—	1,146	—	—	57	—	—	—	—
Netherlands .	117	99	141	117.8	82.9	35,885	34,613	41,192	1,794	1,731	2,060	103.7	87.1
*Poland . . .	246	287	499	85.9	49.4	...	52,439	92,469	...	2,622	4,623	...	...
*Rumania . .	105	45	127	231.8	83.0	...	6,679	19,229	...	334	961	...	...
Sweden . . .	124	101	91	122.7	136.4	35,825	34,261	21,814	1,791	1,713	1,091	104.6	164.2
Switzerland .	4	3	3	114.3	116.6	1,213	1,142	955	61	57	48	106.1	126.9
Czechoslov .	358	361	594	99.4	60.3	71,358	87,335	141,345	3,568	4,367	7,067	81.7	50.5
*U.S.S.R. . .	2,965	3,123	2,282	94.9	130.0	...	...	233,647	...	...	111,682	...	...
Canada . . .	42	45	48	93.3	87.0	8,380	9,000	8,452	419	450	423	93.1	99.1
United St. .	984	764	708	128.8	138.9	222,000	181,400	157,084	11,100	9,070	7,854	122.4	141.3
*Turkey . . .	56	39	21	141.5	268.5	...	3,311	1,810	...	166	91	...	...
TOTALS . . .	4,176	3,747	4,462	111.5	93.4	938,789	922,929	1,019,807	46,939	46,148	50,991	101.7	92.1

\* ) Countries not included in the totals. — 1) The figures from 1931 have been calculated taking into account the results of the new agricultural survey.

for the same country has also been modified. This modification and the addition of the other estimate have been carried out on the basis of unofficial information, official data being still lacking. Though these data have been taken with due care their exactness cannot be guaranteed, all the more so since the country concerned covers such a vast area. According to information received the difficulties experienced last year have been repeated this year.

The area under beet in the U. S. S. R. differed little from that planned and weather was fairly favourable; a large quantity of roots were left in the fields, however, owing to inadequate labour and transport facilities. The Govern-

*Production of Beet-sugar (raw).*

COUNTRIES	PRODUCTION 1 SEPT. - 30 NOV.		TOTAL PRODUCTION DURING THE SEASON					
	1933-34	1932-33	1933-34 1)	1932-33	Average 1927-28 to 1931-32	% 1933-34		
						1932-33 = 100	Average = 100	
	thousand cents	thousand cents	thousand cents	thousand cents	thousand cents			
Germany . . . . .	2) 10,806	2) 8,511	29,863	23,996	42,619	124	70	
Austria . . . . .	2) 1,282	2) 1,100	4,079	3,635	2,873	112	142	
Belgium . . . . .	...	...	4,993	5,677	5,604	88	89	
Bulgaria . . . . .	2) 583	2) 524	743	590	810	126	92	
Denmark . . . . .	...	...	4,982	3,995	3,156	125	158	
Spain . . . . .	...	...	5,401	5,136	5,945	105	91	
Irish Free State . . . . .	283	231	563	574	408	98	138	
Finland . . . . .	88	86	141	127	79	111	180	
France . . . . .	2) 6,344	2) 5,757	20,062	22,421	20,809	89	96	
Great Britain . . . . .	2) 3,630	2) 1,876	9,811	7,399	6,104	133	161	
Hungary . . . . .	2) 1,681	2) 1,278	2,425	2,279	4,467	106	54	
Italy . . . . .	2) 8,555	2) 6,794	8,598	7,123	8,511	121	101	
Latvia . . . . .	...	...	772	600	142	129	543	
Netherlands . . . . .	2) 2,265	2) 1,454	5,853	5,071	5,662	115	103	
Poland . . . . .	2) 1,882	2) 2,752	7,804	9,192	15,553	85	50	
Rumania . . . . .	...	...	2,645	1,102	2,828	240	93	
Sweden . . . . .	...	...	6,382	5,189	3,343	123	191	
Switzerland . . . . .	2) 73	2) 30	163	152	140	107	116	
Czechoslovakia . . . . .	11,087	13,469	11,262	13,980	23,377	81	48	
Turkey in Europe . . . . .	...	...	705	359	153	197	460	
Yugoslavia . . . . .	...	...	1,508	1,869	2,336	81	65	
Total Europe a) . . . . .	—	—	128,755	120,466	154,919	107	83	
U. S. S. R. . . . .	—	—	21,400	17,200	28,809	124	74	
Total Europe b) . . . . .	—	—	150,155	137,666	183,728	109	82	
Canada . . . . .	—	—	1,389	1,500	902	93	154	
United States . . . . .	—	—	33,621	29,183	23,811	115	141	
Total North America . . . . .	—	—	35,010	30,683	24,713	114	142	
Japan . . . . .	—	—	626	592	552	106	113	
Turkey in Asia . . . . .	—	—	340	246	84	138	405	
Total Asia . . . . .	—	—	966	838	636	115	152	
GENERAL TOTALS { a) . . . . .	—	—	164,731	151,987	180,268	108	91	
{ b) . . . . .	—	—	186,131	169,187	209,077	110	89	

a) Not including the U.S.S.R. — b) Including U.S.S.R. — x) Approximate data. — z) To the end of October. — 3) Average 1928-29 to 1931-32.

ment has taken steps to remedy these defects but a part of the crop, as yet undetermined, will be irretrievably lost.

With the data for the U. S. S. R. thus calculated approximately the production of raw beet sugar for Europe and the U. S. S. R. together in 1933-34 is

*Visible stocks of sugar on 1 September.*

COUNTRIES	1933	1932	1931	1930	1929	1928	1927
(Thousand centals)							
Germany . . . . .	7,205	16,453	16,378	6,850	5,165	5,108	5,584
Austria . . . . .	315	154	672	278	168	55	24
Belgium . . . . .	1,252	1,455	1,874	1,351	1,517	1,023	589
Spain . . . . .	3,772	4,312	1,894	1,127	1,563	2,070	2,734
France . . . . .	5,304	4,833	6,784	4,689	4,482	2,388	3,159
United Kingdom . . . . .	7,132	4,665	4,828	5,415	3,666	4,434	5,919
Hungary . . . . .	875	600	1,043	320	284	205	165
Italy . . . . .	4,925	5,741	5,922	5,115	3,966	2,758	1,724
Netherlands . . . . .	3,327	2,937	3,530	2,302	2,249	895	79
Poland . . . . .	3,783	3,893	5,822	3,510	1,790	891	661
Sweden . . . . .	2,156	2,088	2,568	1,947	2,116	1,184	886
Czechoslovakia . . . . .	2,987	4,676	6,905	2,529	1,991	2,388	1,076
<i>Total Europe . . . . .</i>	<i>43,033</i>	<i>51,805</i>	<i>58,220</i>	<i>35,433</i>	<i>28,957</i>	<i>23,399</i>	<i>22,600</i>
Canada . . . . .	2,046	2,103	1,847	1,860	1,517	1,349	1,537
Cuba . . . . .	49,516	52,369	56,042	61,134	30,710	31,151	31,967
United States (ports) . . . . .	9,504	11,804	12,088	10,362	19,989	11,180	7,022
Java . . . . .	64,948	64,280	43,610	32,880	29,566	23,188	19,914
Philippines . . . . .	22	516	0	626	291	425	291
Afloat . . . . .	5,732	7,165	5,776	4,850	4,652	5,027	5,600
<i>TOTAL . . . . .</i>	<i>174,801</i>	<i>190,042</i>	<i>177,583</i>	<i>147,145</i>	<i>115,682</i>	<i>95,719</i>	<i>88,931</i>
(Thousand short tons)							
Germany . . . . .	360	823	819	342	258	255	279
Austria . . . . .	16	8	34	14	8	3	1
Belgium . . . . .	63	73	94	68	76	51	29
Spain . . . . .	189	216	95	56	78	104	137
France . . . . .	265	242	339	234	224	119	158
United Kingdom . . . . .	357	233	241	271	183	222	296
Hungary . . . . .	44	30	52	16	14	10	8
Italy . . . . .	246	287	296	256	198	138	86
Netherlands . . . . .	166	147	176	115	112	45	4
Poland . . . . .	189	195	291	175	90	45	33
Sweden . . . . .	108	104	128	97	106	59	44
Czechoslovakia . . . . .	149	234	345	126	100	119	54
<i>Total Europe . . . . .</i>	<i>2,152</i>	<i>2,592</i>	<i>2,910</i>	<i>1,770</i>	<i>1,447</i>	<i>1,170</i>	<i>1,129</i>
Canada . . . . .	102	105	92	93	76	67	77
Cuba . . . . .	2,476	2,618	2,802	3,057	1,536	1,558	1,598
United States (ports) . . . . .	475	590	604	518	999	559	351
Java . . . . .	3,247	3,214	2,180	1,644	1,478	1,159	996
Philippines . . . . .	1	26	0	31	15	21	15
Afloat . . . . .	287	358	289	243	233	251	280
<i>TOTAL . . . . .</i>	<i>8,740</i>	<i>9,503</i>	<i>8,877</i>	<i>7,356</i>	<i>5,784</i>	<i>4,785</i>	<i>4,446</i>

*Sugar production.*

(U. S. S. R. not included).

	1932-33	1931-32	1930-31	1929-30	1928-29	1927-28	1926-27
(Thousand centals)							
Europe . . . . .	120,858	130,536	186,889	160,080	153,899	142,371	130,274
Total . . . . .	517,030	553,031	598,447	593,553	584,712	551,731	509,622
(Thousand short tons)							
Europe . . . . .	6,043	6,527	9,344	8,004	7,695	7,118	6,514
Total . . . . .	25,851	27,651	29,922	29,677	29,235	27,586	25,481

expected to be. 9 % larger than last season while the world total of beetsugar will be 10 % larger than in 1932-33.

A table of end-of-season stocks in the majority of European countries, in Canada, Cuba, Java, the Philippines and the United States and afloat has been added. World stocks, which increased until 1931-32, despite the diminution of production that began in that season, commenced to decline only in 1932-33. On the other hand stocks in Europe began to decline in 1931-32.

Though the situation of the sugar industry has improved with reference to last year, it remains critical. A drastic decline in cane-sugar production, though far from general, has again occurred in Cuba and Java; in the other countries there has been an increase or only a slight decrease. Production of beet-sugar in Europe and in extra-European countries diminished in 1932-33 by only 5 % with respect to the preceding season.

Consumption, which began to decline after 1930-31, the year of maximum, continued to do so in 1932-33 both in Europe and in the other continents. In Europe consumption shows a regression in Austria, Belgium, Czechoslovakia, Great Britain, Hungary, Italy, the Netherlands, Poland and Spain, the reduction in these countries is larger than the increase in the others. In the extra-European countries there has been a contraction in consumption but less markedly than in Europe. The United States have taken a large part in the total decrease.

The situation at the end of 1933-34 remains obscure.

All that can be said is that for beet-sugar an increase of about 10 % in production over 1932-33 is expected.

As regards cane-sugar Java, continuing to make great sacrifices, will produce less than two-fifths of last season's outturn.

As for Cuba, given the present situation, the quantity of the crop has not yet been calculated. A large number of growers have demanded the abolition of the international agreements but the Government does not at present seem inclined to give way.

India is now the world's largest producer. As regards its production of white sugar the number of factories has increased from 30 in 1931-32 to 57 in 1932-33 and 110 in 1933-34. Area under cane this season is 11 % greater than last season.

For the remaining countries no appreciable decreases in production have been reported. There is no reason for believing that consumption will increase to any appreciable extent.

In face of these facts it may be said that the sugar crisis is diminishing in intensity but only very gradually.

E. R.

*France*: Production of sugar-beet was, as expected, a small average. The bad, very rainy weather since the end of October and throughout November hindered pulling and transport; the extremely rigorous cold and the severe frosts at the beginning of December made pulling of the roots remaining in the ground still more difficult.

Yields of beets for distilling were a little higher than those of beets for sugar, as indicated in the following table.

	1933	1932	Average 1927-31	% 1932 = 100	Average = 100
Area (ooo acres) . . . . .	105	108	88	97.2	119.1
Production (ooo centals) . . . . .	24,289	27,813	21,855	}	87.3
(ooo sh. tons) . . . . .	1,214	1,391	1,093		

*Great Britain and Northern Ireland* : In England and Wales November weather was mostly open. Sugar content was considerably lower at the end of that month than earlier in the season.

*Hungary* : Toward 20 November lifting and transport continued only in localities where rainy weather had hindered operations.

*Lithuania* : The weather conditions were favourable for the harvesting of sugar beet.

*Barbados* : At the end of October the cane crop throughout the island was in excellent condition. Heavy rains were experienced in November. The 1933-34 sugar crop was expected to be about 2,460,000 centals (123,000 short tons) against 2,150,800 (107,540) in 1932-33 and the average of 1,426,000 (71,300) in the five years ending 1931-32.

*St. Lucia* : At the end of September the 1934 crop was well advanced. Ploughing and planting continued.

*Formosa* : Consequent on lack of rain growing conditions of the cane to be cut from this autumn to next spring, are poor; those of the cane just planted are in an average scale.

*India* : In Bihar and Orissa and in Bengal cutting and grinding of cane was proceeding at the end of November and condition of the standing crop was reported to be good.

*Egypt* : Sugar-cane has generally begun to mature. Cutting of some of the early-sown areas is being continued for local consumption. The crop is expected to be slightly above the average. Area in bearing is this year at 73,600 acres, an increase of 1.2 % on that of 1932 and an increase of 28.1 % on the 1927-31 average. Production is forecast at 50,604,000 centals (2,530,000 short tons) of cane, an increase of 1.6 % over last year and an increase of 27.8 % on the average.

*Union of South-Africa* : In mid-November crop condition averaged 13 % below normal. Rainfall had been much below average, having been only 40 % of normal in the previous three months, the most important period of the planting season.

## VINES

November was rather rainy with results varying according to region. In some important vine areas, as in Italy and the south of France, there was an excess of moisture and work was interrupted; in others, as in Algeria and some parts of Spain, the rain was, on the other hand, beneficial.

*Vines.*

COUNTRIES	AREA					PRODUCTION								
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	1933	1932	Average 1927 to 1931	% 1933		
				1932	Average							1932	Average	
														1932
			= 100					= 100					= 100	
1,000 acres					1,000 Imperial gallons					1,000 Amer. gallons				
*Germany	206	205	202	100.7	102.1	...	37,873	49,068	...	45,482	58,927	...	...	
Austria 1)	67	66	77	100.7	86.2	16,177	23,708	18,307	19,427	28,471	21,986	68.2	88.4	
Bulgaria 2)	229	222	208	102.8	110.0	61,703	57,722	42,503	74,100	69,318	51,043	106.9	145.2	
Spain 1) 2)	3,541	3,526	3,482	100.4	101.7	410,087	466,077	495,867	492,478	559,716	595,492	88.0	82.7	
France (*) 3)	3,843	3,808	3,761	100.9	102.2	...	1,090,410	1,238,531	...	1,309,485	1,487,364	...	...	
Greece 1) 2)	1,180	1,159	1,101	101.8	107.1	526,549	426,615	560,046	632,338	512,326	672,565	123.4	94.0	
Italy 5) (u)	2,358	2,433	2,107	96.9	111.9	50,959	83,911	52,998	61,197	100,769	63,646	60.7	92.2	
Luxemb. 1) 2)	7,308	7,314	8,339	99.9	87.6	747,917	1,016,236	863,127	898,181	1,220,408	1,036,538	73.6	86.7	
*Switzerland	3	3	3	85.8	78.8	1,245	891	1,361	1,495	1,070	1,635	139.7	91.5	
Czechoslov.	33	32	33	103.1	99.5	...	9,107	12,148	...	10,937	14,588	...	...	
—	49	47	43	103.5	113.5	7,479	9,547	7,588	8,982	11,465	9,077	78.3	99.0	
*Syria & Leb.	130	130	117	100.2	111.6	—	—	—	—	—	—	—	—	
Algeria	929	914	710	101.6	130.8	369,559	402,872	292,393	433,807	483,813	351,138	91.7	126.4	
Tunis 1) 2)	122	99	77	123.5	157.7	31,223	37,616	19,145	37,495	45,173	22,992	83.0	163.1	
TOTALS	16,130	16,127	16,436	100.0	98.1	2,222,898	2,525,195	2,353,335	2,609,500	3,032,520	2,826,112	88.0	94.5	

\* Countries not included in the totals. — 5) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are possessed but those of area not yet available. — s) Total area. — t) The data of area and of production refer to the four principal producing departments. — u) Unmixed crop. — m) Mixed crop. — 1) Area bearing. — 2) Production of must. — 3) — Approximate figure calculated on the basis of the June estimate and taking into account the reduction of 198,000 acres made in the 1932 estimate. — 4) Unofficial estimate. — 5) The figures from 1931 have been calculated taking into account the results of the new agricultural survey. — 6) Approximate calculated figure.

At the end of November the general condition of the vines in the northern hemisphere was satisfactory; without being perfect, lignification generally took place under good conditions. The first half of December was marked by extremely severe cold, which may have caused a certain amount of damage in the vineyards with excessive moisture.

The estimate of the new crops has undergone a further reduction owing to the decrease in the Italian estimate and the news of vintage results in France outside the southern districts. The total outturn of the northern hemisphere



would now seem, on the basis of the latest informations, to oscillate around 3,080 million Imperial gallons (3,700 million American gallons), with a range of 40 (50) or 60 (80) millions.

Taking into account the fairly large stocks of last seasons crop the total available supplies should be very easily absorbed by consumption, assuming a further reduction of the latter in the non-producing countries. In fact the statistical situation in 1933-34 is very sound in the principal viticultural countries France, Algeria, Italy, and Spain in particular but less good in the Danubian lands – Jugoslavia and Rumania particularly – owing to persistent overproduction.

International trade is nevertheless hindered by restrictions in the non-producing countries and by regulation of imports by certain of the principal importing viticultural countries, France and Switzerland particularly, and by the tendency of the majority of others to restrict imports.

Besides, the American market is opening much less freely than was effected and does not appear likely to furnish an important market for European wines.

Despite these somewhat unfavourable conditions in international trade the present season has begun much better than the last in both France and Italy, movement of the crop is very active. On the other hand in Spain, the Danube lands and Tunisia the market situation remains bad ; in Algeria, despite the smaller production, the situation is worse than last year. Prices have been generally poor since the beginning of November.

In the *southern hemisphere* weather has varied according to continent. The winter has been exceptionally dry in Australia and South Africa, first rains having fallen in the latter toward the end of October ; crop condition reflects this especially in the non-irrigated areas, where production will be much reduced.

In South America, on the other hand, the winter has been very rainy and cold but the spring has been fine and favourable to the vines.

P. DE V.

\* \* \*

*Bulgaria* : The vintage was finished during the latter half of November. Sugar content of the must this year is smaller than that of preceding years.

*Spain* : The weather in November was irregular, being rather rainy and cold in the North. At the beginning of December the condition of vines was satisfactory.

Commercial activity remains low. Export to the United States, France and Switzerland will apparently meet with some difficulty. Sales will be difficult, despite the reduced quantity and good quality of production. Quotations are firm.

*France* : November was extremely rainy, particularly in the last three weeks. Field operations, pruning and planting were completely checked in the South, where the soil is saturated. These circumstances did not favour lignification in western regions, the centre and the east. Crop condition at the beginning of December was, on the whole, not very satisfactory. A period of very rigorous cold weather with very low temperatures prevailed at the beginning of December.

Crop declarations for the four large producing departments in the South confirm very exactly the preliminary figure given last month. In the other regions, the Garonne basin, Bordelais, Charente, the Loire valley, Burgundy and the Côtes du Rhône, on the contrary, the déficit is in some cases a little larger than was forecast, with the result that the total of crop declarations for the whole of France is apparently about 1,030 million Imperial gallons (1,240 million American gallons); in 1932: 1,047 million Imperial gallons (1,252 million American gallons) of crop declarations and 1,090 million Imperial gallons (1,309 million American gallons) of total production.

Stocks in the South were nearly one-fifth larger than last year; they are also fairly abundant in the Southwest and in some other areas but for the whole of France they do not appear greatly to exceed those of last year.

As the total French-Algerian supplies, according to crop declarations, are apparently well below 1,540 million Imperial gallons (1,850 million American gallons), the limit above which segregation of part of the crop should take place, it is probable that the latter will not be decided by the Government. Whatever the size of the variations, positive or negative and certainly very small, in the total of these supplies, the latter should, in any case, correspond nearly exactly to requirements for consumption, taking into account the normal stock remaining on growers' hands at the end of the season. The total French-Algerian consumption (trade and family) was, in fact, about 1,450 million Imperial gallons (1,740 million American gallons) during the last season leaving a stock of 130 (160) million to 150 (180) million in producers' hands; on the average for the seven seasons 1925-26 to 1931-32 it was about 1,430 (1,720 million) leaving an average stock of 92 (111) million.

The statistical position for the current season is consequently very good and this, together with the excellent quality of the wines produced, has brought about a fair activity on the markets. The trade has been largely supplied by producers, whose sales in October were very high and much larger than those of the same month of last year; trade stocks have appreciably increased and taxed commercial consumption is also high and larger than that of the last six years for the same month. Quotations have remained firm since mid-November.

*Italy*: The very rainy weather that prevailed throughout the country during November and up to 10 December, with the exception of some days of fine weather locally, checked seasonal operations nearly everywhere. The vines are in good state of growth although the snow has caused some not very large damage in northern regions.

According to information transmitted in November by the Minister of Agriculture the deficit of wine production should be 220 million Imperial gallons (260 million American gallons) to 260 (320) million compared with last year, which should give a figure of production varying from 750 (900 million) to 790 (950), with a deficit compared with last year of 21.6 % to 26.0 %.

In fact, the new estimate of production of grapes for wine, which is given below, indicates a deficit of 27.4 % compared with last year and of 12.4 % compared with the average of the preceding five years.

On this basis, even adopting the highest coefficient for the conversion of grapes into must recorded in the last ten years, the total production of wine should apparently hardly exceed 726 million Imperial gallons (871 million American gallons).

Trade activity is fairly low, except in certain southern areas; quotations are firm. Consumption and exports are normal. The quota for Switzerland, which is

much the largest purchaser of the Italian product, gives rise to the risk, however, of a fairly serious repercussion on exports.

In the following table are given the final data for 1933 of grape production according to use, with comparable figures for 1932 and 1931; the figures have been calculated on the basis of the new agricultural survey.

	1933	1932	1931
	(000 centils)		
Total production of grapes . . . . .	118,540	161,507	134,165
Wine grapes used for wine . . . . .	111,018	152,860	126,757
Wine grapes for direct consumption . .	4,866	5,603	4,804
Table grapes, fresh. . . . .	2,522	2,813	2,350
Fresh grapes for drying . . . . .	134	130	255
Raisins . . . . .	(44)	(74)	(84)

*Yugoslavia* : The bad weather at the time of ripening, led to poor vintage results both qualitatively and quantitatively.

Given this small production the growers have kept off the market and asked for rather high prices. Traders, however, have considerable stocks from old crops and prices consequently remain low.

*Syria and Lebanon* : The rains in October and November were favourable and crop condition was good in Syria against only average (100) in the previous month, good in Lebanon (100) as in the previous month, average (75) as last month in Jebel Druze; in Latakia conditions were favourable.

Production is, however, smaller.

*Algeria* : After the long drought that persisted until the end of October there was a period of rains in November with sufficient fine intervals to permit seasonal operations, pruning and ploughing, to be carried out.

Lignification has been satisfactory despite the shooting stimulated in some coastal vineyards by the rains at the end of October. The general condition of the vineyards was fairly satisfactory at the beginning of December.

Stocks in growers' hands were only 7,370,000 Imperial gallons (8,850,000 American gallons), much smaller than those of last year.

Despite the generally very satisfactory quality of this year's wines they are often of alcoholic content much lower than fixed for commercial sales and this may hinder movement of the Algerian crop. Algerian growers sold 62 (74) million gallons in October against 80 (96) millions in October 1932 but this contraction must be considered a phenomenon due to a temporary movement in the French market, which has a tendency to take its supplies from the south owing to the excellent quality of these wines. Prices in November remained firm.

*Tunisia* : The rains of November were beneficial and allowed cultivations, which had been greatly hindered by the drought, to proceed. In the north lignification was slow and pruning had scarcely begun at the end of November. The vines were generally free from weeds.

*Australia* : Drought in the winter and at the beginning of the spring, reduced the non-irrigated areas. After the rainfall in September-October conditions improved ; budding was late and the vines did not look very promising in spring but it was still possible to forecast a satisfactory crop.

The amount of the 1933 crop is not yet known for some States, but the approximate figures show a yield above that of 1932 and below the average of 1927-1931. Total production of wine is estimated at 16,305,300 million Imperial gallons (19,581,200 American gallons), that is, 15 % above 1932 crop and 5 % below the average.

On the basis of the figures known for South and Western Australia and for Victoria the total crop of raisins (currants, sultanas, lexias and others) in the Commonwealth may be estimated at 1,600,000 centals (80,000 short tons), against 1,351,900 centals (67,600 short tons) last year and 1,279,300 centals (63,960 short tons) average.

There are probably no important variations in area. In South Australia area bearing is 0.3 % above that of last year and there is an insignificant reduction in total area.

The total of wine in bond on 30 June 1933 was 13,691,000 Imperial gallons (16,432,000 American gallons), which is equivalent to an average crop. Exports during the year ending 30 June 1933 were 3,093,000 Imperial gallons (3,698,000 American gallons), that is a reduction of 15 % on those of 1931-32.

## WORLD PRODUCTION OF OLIVE-OIL

In the Mediterranean basin weather was at first favourable to olives but subsequently worsened, especially in the final period of ripening. In Spain the weather in May and June favoured flowering and fruiting, which were abundant, but in September the drought caused such serious losses that production fell notably below the average; production of oil is consequently considered as poor and will not attain even 6.3 million centals (83 million American gallons), being thus 20 % below the average oil production of the last ten years. The importance of the diminished production of oil in Andalusia, particularly in the eastern districts, must be noted and, as about half the olive area is in these districts, this explains the fact that despite good results in other areas, as Catalonia, Aragon and Estremadura, the total production of Spain this year is so poor.

In Italy growth was somewhat backward in spring but subsequently in summer the trees showed good recovery. Attacks of olive fly were very severe and widespread this year over great areas but the production of olives, which at first was expected to remain below the average, was somewhat above it at the time of the provisional estimate. With respect to the preceding year production in Liguria, Umbria and Calabria was considerably larger ; on the other hand in Apulia, Abruzzi, Molise, Lazio and Toscana it is distinctly smaller.

The official figure for olive production in Italy is not yet known but assuming a yield averaging 16-16 ½ % it should be 4.96 to 5.00 million centals (65 to 66 million American gallons) an amount slightly above that of last year, which was 4.63 (61), and the five-year average of 4.46 (59). It is not, however, entirely excluded that the yield of the presses will be less than that calculated.

The losses caused by the autumn storms this year in Greece brought a very heavy reduction in the olive crop with respect to that of last year, when an exceptionally large crop was obtained; production of oil is considered to be below the average and that of table olives remains about 17 % less.

In Portugal the trees lost a large proportion of their fruit and a poor outturn of olives is expected. The rains were insufficient and in some areas violent winds in July caused shedding. The good forecast made at the beginning of the season has in consequence had to be modified and it is assumed that the results of the present season will not differ appreciably from those of last year, when the crop was also poor.

*Olive and Olive Oil Production.*

COUNTRIES	AREA				ENGLISH MEASURES			AMERICAN MEASURES			% 1933/34		
	1933/34	1932/33	Aver. 1927/28 to 1931/32	% 1933/34	1933/34	1932/33	Aver. 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	1932/ 1933 = 100	Aver. = 100	
Thousand acres	Thousand centals	Thous- and	s) pounds t) Amer. gallons	%									
Spain 1) . .	4,641	4,723	4,452	98.3	104.2	a) 33,498 b) 6,243	40,469 7,690	45,212 8,744	3,349,798 82,040	4,046,892 101,054	4,521,176 114,907	82.8 81.2	74.1 71.4
Greece 2) . .	—	—	—	—	—	c) 573 d) 1,676	796 2,961	689 1,997	57,320 22,017	79,570 38,913	68,947 26,245	72.0 56.6	83.1 83.9
Italy 3) / a)	1,991	1,992	1,549	99.9	128.5	e) 30,913	28,633	27,929	3,091,330	2,863,312	2,792,908	108.0	110.7
Portugal . .	3,144	3,150	3,997	99.8	78.7	b) 4,960 f) . . .	4,634 849	4,464 1,202	65,183 ...	60,895 11,156	58,664 15,800	107.0 ...	111.0 ...
Un. States . .	—	—	—	—	—	g) . . .	440	410	...	44,000	40,960	...	...
Syria and Lebanon	191	191	184	100.0	103.6	j) . . . i) . . .	658 92	1,280 251	...	65,754 1,203	127,986 3,305	...	...
Algeria . .	—	—	—	—	—	h) 358	291	492	4,710	3,821	6,459	123.3	72.9
Tunis . . .	—	—	—	—	—	j) 1,323	1,323	783	17,382	17,382	10,284	100.0	169.0

a) Pure crop. — b) Mixed crop. — c) Olives. — d) Oil. — e) Area bearing. — f) Olive production refers to table olives. — g) The figures from 1931 have been calculated taking into account the results of the new agricultural survey. — h) Unofficial data.

As regards the European countries of which the production is smaller, it is known that in Yugoslavia weather in September was on the whole favourable; insects and persistent drought in October led, however, to shedding and at present production of oil is expected to be average or slightly below average. In France also production of olives is reported to be rather poor.

In the North African countries, though the crops have suffered from drought and in vast areas also to parasite attacks, production of oil is reported to be above that of 1932-33. In Tunisia flowering occurred in good conditions and growth during the summer was normal; only at the beginning of October the trees were attacked by fly and suffered from drought, which led in some districts to shedding; in general, however, the situation remained good in the most important producing areas. The production is considered as equal to the very large one of last year. In Algeria bad weather caused considerable losses and shedding

was prevalent. The lack of rains, which has prevented the fruit arriving at complete maturity, has been very prejudicial. Production, though remaining at a higher level than that of the past season, is considerably below the five-year average. In Morocco disease and bad weather have caused damage in the olive groves and production of oil is expected to be on the whole poor.

In the eastern countries the weather was not favourable: in Syria and Lebanon flowering was very good but subsequently wind and drought seriously compromised the crop; in Palestine also a very poor outturn was expected, varying from 15 to 40 % of normal.

Finally in the United States the few and relatively unimportant olive-growing areas had to struggle against unfavourable circumstances with the result that crop condition is very much below that of last year.

On the basis of the estimates of production already known for several of the most important olive-growing countries and of the information available for the countries for which statistical data are still lacking it may be said that world production of olive-oil in 1933-34 will be somewhat less than that in 1932-33 and than the average of the five years ending 1931-32. Given that Spain and Italy, two countries contributing about 70 % of total production, expect this year a production of about 11.2 million centals of olive oil (145 million Am. gallons) against 12.3 (162.2) last season and 13.2 (174) on the average. It is not to be excluded, however, that this forecast may still be more or less modified when the official figures of olive-oil production in Italy and some other countries of lesser importance as producers are available.

On the whole, world production of olive-oil this year is estimated at 17.2 million centals (226 million am. gallons) against 18.7 million (246.2) last season.

M. C.

## OLIVES

*Greece*: The first forecast of olive-oil production this year — 2,094,000 centals (27,522,000 American gallons) — has undergone a severe reduction (about 20 %). Production will thus be smaller than those of the last six years. This and the almost complete exhaustion of stocks from previous years makes it probable that supplies will be very limited in 1933-34 and that prices will be firmer.

*Cyprus*: At the middle of November olive picking was in progress.

*Syria and Lebanon*: The rains of October and November were advantageous to the trees, of which the condition in November was good (100) in Syria and in Lebanon, while in Latakia conditions were favourable.

Production is nevertheless much reduced.

*Algeria*: Harvesting is in progress but in several plantations it has not been effected as the very low quotations hardly permit picking expenses to be covered. The olives are generally small, having been hindered in growth by the heat and drought. Yields are everywhere not very satisfactory.

*Tunisia* : The harvest had everywhere commenced by the end of November but was not expected to reach its full height until toward the middle of December. The losses caused by *dacus* are fairly large and in a general way yields appear somewhat smaller than expected, especially in the districts of Susa, Kairwan and Thala, which represent about 40 % of the productive trees; in the extreme south — Sfax, Gabès and Tozeur — where *dacus* has caused only small losses, the crop will be above average, yields of oil appear normal and quality very good.

The preliminary official estimate has been reduced to 1,323,000 centals of oil. Crop condition was everywhere good.

## COTTON

The report of December on cotton production in the current season published by the United States Government shows an increase of 77,000 bales. with respect to the November estimate and of 863,000 bales with respect to the first estimate published in August. In comparison with last year there is an increase of 1.3 % while with respect to the 1927-31 average there is a decrease of 10 %. In each of the ten preceding seasons production has been greater than estimated in De-

### Cotton.

COUNTRIES	AREA					PRODUCTION OF GINNED COTTON											
	1933/34	1932/33	Aver- age 1927/28 to 1931/32	% 1933/34		1933/34	1932/33	Average 1927/28 to 1931/32	1933/34	1932/33	Average 1927/28 to 1931/32	% 1933/34					
				1932/ 1933	Aver- age 1933							1932/ 1933	Aver- age 1933				
														= 100	= 100	= 100	= 100
1,000 acres					1,000 centals			1,000 bales of 478 lb.									
Bulgaria . .	49	20	13	250.8	369.9	86	40	18	18	8	4	213.5	478.5				
Spain . . .	19	20	23	91.8	80.9	44	23	21	9	5	4	187.9	213.1				
Greece . . .	1) 93	50	44	186.2	212.2	174	105	69	36	22	15	165.2	250.4				
Italy . . . .	4	4	8	100.2	47.1	5	5	15	1	1	3	99.8	36.8				
U.S.S.R. . .	2) 4,977	5,139	3,249	96.8	153.2	3) 9,389	8,497	6,577	3) 1,964	1,778	1,376	110.5	142.8				
United States	30,144	35,939	40,996	83.9	73.5	62,986	62,147	70,061	13,177	13,002	14,657	101.3	89.9				
Mexico . . .	421	188	406	224.5	103.8	1,068	453	1,043	223	95	218	235.6	102.4				
China . . . .	4) 6,025	5,633	4,937	107.0	122.0	4) 13,112	10,803	10,224	4) 2,743	2,260	2,139	121.4	128.2				
Korea . . . .	429	393	481	109.2	89.2	701	606	643	147	127	134	115.6	109.1				
India & . . .	*) 22,714	*) 20,761	*) 23,419	109.4	97.0	3) 18,476	3) 16,900	3) 20,312	3) 3,865	3) 3,536	3) 4,249	109.3	91.0				
Syria y Leb.	19	20	50	96.4	38.5	19	19	55	4	4	12	97.5	34.1				
Turke . . . .	...	358	407	...	...	90	135	413	19	28	86	66.5	21.7				
Fr.Eq. Africa	...	124	30	...	...	93	60	16	19	12	3	155.6	587.4				
Egypt . . . .	1,873	1,135	1,840	165.0	101.8	4) 8,697	4,909	7,393	4) 1,819	1,027	1,547	177.2	117.6				
*Eritrea . . .	12	5	6	250.0	195.3	...	7	6	...	2	1	...	...				
*Uganda . . .	1,091	1,071	700	101.8	155.8	...	1,160	694	...	243	145	...	...				
*Sudan . . . .	332	325	323	102.1	102.7	...	582	667	...	122	140	...	...				
TOTALS . . .	§) 67,249	69,784	75,903	96.4	88.6	114,940	104,702	116,860	24,044	21,905	24,447	109.8	98.4				

\*) Countries not included in the totals. — §) In calculating the totals, account has been taken of the probable area in some countries for which estimates of production are possessed but those of area are not yet available. — 1) Unofficial estimate. — 2) Area cultivated up to 10 June. — 3) First estimate. — 4) Second estimate. — 5) Third estimate.

cember, save on three occasions. During November eight States increased the production estimate by 224,000 bales, of which 160,000 bales were in Texas and Oklahoma, which together account for about 44 % of total production; the other States, on the other hand, decreased their estimates by 147,000 bales in all. The United States average yield is now forecast at about 209.4 lb. of lint per acre against 208.7 lb. last month and 173.3 lb. last year; this is the highest yield since 1914, save for that of 1931, which was 211.5 lb. and is due to the exceptionally favourable weather that prevailed during growth and almost throughout the picking season, especially in the States west of the Mississippi. The area left for harvest is estimated at 30,144,000 acres, 16% below that of 1932 and 27% below the 1927-31 average. This is the smallest area since 1922. Taking into account the areas leased to the Government through the medium of the Agricultural Adjustment Administration and amounting to 10,396,000 acres and the areas subsequently abandoned, about 390,000 acres or 1.3 % of the remaining acreage, the area in cultivation on 1 July 1933 is estimated now at 40,929,000 acres, or 12 % more than on 1 July 1932, but about 3 % less than the 1927-31 average. This figure of 40,929,000 acres has been exceeded only five times, namely, in 1925, 1926, 1928, 1929 and 1930. With respect to it, the actual area on which harvesting has been carried out is 26.4 % smaller. The December estimate is provisional, the final estimate not being due to appear until 21 May 1934.

The quality and grade of the fibre are good and picking was carried out rapidly and in many areas under ideal conditions. Ginning is further advanced than usual and it is expected that it will be ended in January. The average weight of running bales is this year much above normal. This means that the final ginning figure, published in running bales, will probably be about 400,000 bales below the production expressed in bales of 478 pounds lint.

The Government report, having already been discounted by the market, had no effect on prices. These did not in the period under consideration undergo any appreciable variation and continued to be affected by the Government financial and agrarian policy as well as by the fluctuations of the dollar-sterling exchange. The statistical position being well-known and news concerning world supplies and consumption not being likely to present any element of surprise, these factors are not likely to play any important part in the determination of prices. The market is less active than in the past, the fact that the growers in the Southern States have received large advances from the Government enabling them to hold their cotton contributing largely to this. Internal consumption and exports remain at levels superior to those of the last three years.

In the U. S. S. R. acquisitions up to 1 December showed an appreciable increase with respect to last year. Yields are in general better than in 1932, when they were rather small.

The Government of India has just published its third report on areas cultivated and its first report on production for the current season. The area is 9.4 % larger than that of last year and 3 % smaller than the 1927-31 average. Estimated production, though slightly smaller than expected, is 9.3 % above the corresponding estimate of 1932 but 9 % below the mean. The conversations with Japan continue with a view to fixing quotas of Indian cotton to be imported



by that country and of Japanese cloth to be imported by India. Market activity is very much reduced and stocks are increasing. The Japanese boycott continues.

The Egyptian Government published on 4 December the second estimate of cotton production in the current season. According to this estimate, which appears at the close of the picking season, after three months of ginning, production is about 1,819,000 bales of 478 lb., an increase of 11 % on the preceding estimate, of 77 % on last year's production and of 18 % on the 1927-31 average. This is the largest outturn so far registered in Egypt, being about 3 % above the 1929 record. The production forecast is distributed as follows, the corresponding 1932 figures being given for comparison and all being in thousand bales of 478 lb. : above 1  $\frac{3}{8}$  inch, 475 against 361 in 1932 ; above 1  $\frac{1}{4}$  inch, 97 against 73 ; above 1  $\frac{1}{8}$  inch, 1,211 against 570 ; *Scarto*, 37 against 23. Included in the first class are 236,000 bales of *Sakellaridis* against 252,000 in 1932, 277,000 in 1931, 455,000 in 1930 and 581,000 in 1920. The average yield forecast is 464 lb. of lint per acre, against 432 lb. last year. For *Sakellaridis*, however, the average yield is only 278 lb. per acre against 314 lb. last year.

It is officially announced that all restrictions affecting cotton cultivation in Egypt are repealed for the season 1934-35.

The Government estimate, which is equal to or smaller than the majority of non-official estimates, of which some exceed even 1,845,000 bales, has had no influence on prices, which follow those of American. Exports in November reached a record figure. Arrivals are beginning to fall off, owing to holding by growers, but ginnings are well advanced. The margin between prices of Egyptian and those of American is still limited and consequently favours consumption of the former. The Government has decided to suspend provisionally the sale of its cotton. This concerns only small quantities, however, remaining from old stocks.

The Government of the Anglo-Egyptian Sudan has just published its first estimate for the current season. The total area cultivated is slightly larger than that of last season but, while *Sakellaridis* shows a small decrease, American is increasing, especially in the area of rain-grown cotton. On the whole a good crop is expected.

The cotton crop in Syria and Lebanon shows a fresh regression. On the other hand the crops in French Central and West Africa are increasing rapidly as well as those in the Belgian Congo.

I. S.

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*Bulgaria* : Production is this year expected to be very large thanks to the great extension of area. Harvesting terminated toward mid-November. New crop cotton has been purchased by the cooperatives and dealers at 8 to 10 levas per kilogram while the average price for June was 25 to 30 levas.

*U. S. S. R.* : On 1 December of the current year purchases of seed cotton by State bodies and others reached 26,113,000 centals a quantity 3,200,000 centals greater than at the same date last year.

The purchase figures indicate that unit-yield of seed cotton this year has been 812 lb. per acre against 741 in 1932 in Uzbekistan, 633 lb. against 544 in Turkmenistan, 544 lb. against 434 in Tadjikistan and 482 lb. against 312 in Armenia.

In Ukraina, which is the most important of the new cotton regions of the Soviet Union as regards area under the crop, production this year has been very small, due partly to exceptionally unfavourable weather with summer temperatures much below the average, excessive cloud and persistent rains and mists after the early frosts at the beginning of October, which shortened the growth cycle by two weeks with respect to the normal period. Hoeing was also inadequate and about 73 % of the fields under cotton were infested by weeds.

Picking had generally begun by the middle of November and on 25 November the quantities acquired by the Government in Ukraina represented only 1 % of the plan.

*United States* : The quantity of cotton, not including linters, ginned from the 1933 crop to the close of business on 13 November was 11,251,000 running bales (counting round bales as half bales), against 10,534,000 in 1932, 14,208,000 in 1931, 11,963,000 in 1930, 11,890,000 in 1929 and 11,321,000 in 1928. To the close of business on 30 November: 12,108,000 against 11,635,000 in 1932, 15,018,000 in 1931, 12,837,000 in 1930, 12,853,000 in 1929 and 12,560,000 in 1928.

*Cyprus* : During the first half of November cotton picking was carried out. Production was stated to be below the average.

*India* : According to telegrams received by the Institute on 11 December from the Governments of the Punjab and Madras the areas sown to cotton and the production of lint in these provinces were as follows, the corresponding figures for the previous season and for the five years ending 1931-32 being also given :

		1933-34	1932-33	Average 1927-28 1931-32	% 1932-33 = 100	1933-34 Average = 100
Punjab.						
Area	(ooo acres) . . . . .	2,980	2,252	2,459	132.3	121.2
Production	(ooo centals) . . . . .	3,204	2,464	2,482	130.0	129.1
	(ooo bales of 478 lb.) .	670	515	519		
Madras (third estimate).						
Area	(ooo acres) . . . . .	1,762	1,728	1,839	102.0	95.8
Production	(ooo centals) . . . . .	1,498	1,445	1,486	103.7	100.8
	(ooo bales of 478 lb.) .	313	302	311		

Weather was not on the whole quite favourable. In the Punjab some districts suffered from flood while in others American cotton was affected by leaf-roller, tela or premature bursting of the undeveloped bolls.

In the Central Provinces picking was progressing in November under clear, cool weather conditions and at the end of that month the crop was in good condition.

*Egypt* : Cotton ginned up to end of November, in bales of 478 lb. net weight was as follows :

Varieties	1933	1932	1931	1930	1929
Sakellaidis . . . .	91,200	103,400	121,500	163,400	226,200
Other varieties above :					
1 <sup>3</sup> / <sub>8</sub> " . . . . .	98,000	57,350	561,900	588,800	623,000
1 <sup>1</sup> / <sub>4</sub> " . . . . .	36,500	41,300			
1 <sup>1</sup> / <sub>8</sub> " . . . . .	630,700	322,550			
Total . . . . .	865,400	524,600	683,400	752,200	849,200
Scarto (linters) . .	16,400	11,800	17,100	16,500	18,400

*Uganda* : Weather conditions in October were on the whole fairly satisfactory but the dry weather experienced up to mid-November, has caused boll shedding in the early and July-planted cotton and has slowed down the development of the late cotton. In August and September 45 % of the crop was planted and rain was reported to be wanted during the second half of November in order to assure a good yield. Blackarm disease has not been serious and there has been very little damage from other pests and diseases. At the middle of November the indications were that the yield per acre would be somewhat below normal.

## FLAX

*Linseed*. — The Ministry of Agriculture at Buenos Ayres communicated in a telegram of 13 December the first estimate of linseed production, which confirms our forecast of a very small crop. The same cable gave the revised estimate of area sown to flax, now placed at 6,845,000 acres, a decrease of 321,000 on the October figure.

The small Argentine crop is due to a slight degree to reduction in areas cultivated this year, which are about 8 % less than either the final estimate of last year or the five-year mean, and to a greater extent to bad weather, which caused serious damage in the main producing centres. The estimated production, though distinctly smaller (— 30.5 %) than the five-year mean, is almost the same (+ 0.6 %) as the greatly reduced production of last year, estimated at 29.3 million centals (52.4 million bushels).

The new estimates that have reached the Institute and the data previously available cover about 90 % of the world production, excluding that of the U. S. S. R., for which it is known only that the figure of area sown up to 10 June was about 741,000 acres smaller than that planned. Taking account also of the weather that has prevailed in some other countries that have not yet communicated their estimates, world production (excluding the U. S. S. R.) may be calculated at 46-49 million centals (83-87 million bushels) against 50.3 (89.8) million last year and 78.5 (140.2) million on the average. This estimate is liable to modification but the possible difference from the final results depends almost entirely on such revisions as may be made in the provisional

## Flax.

COUNTRIES	†) AREA						†) PRODUCTION									
	1933	1932	Aver. 1927 to 1931	% 1933		Aver. age = 100	1933	1932	Aver. 1927 to 1931	1933	1932	Aver. 1927 to 1931	% 1933			
	—	—	—	1933/34			—	—	—	—	—	—	1933/34			
	1933/34	1932/33	1927/28 to 1931/32	1932	1933/1933 = 100		1933/1934	1932/1933	1927/28 to 1931/32	1933/34	1932/33	1927/28 to 1931/32	1932	Aver. 1932/1933 = 100		
	1,000 acres			1,000 centals			1,000 pounds									

## Fibre.

Germany . . . .	12	11	30	108.1	40.2	—	—	—	—	—	—	—	—
Austria §) . . . .	4	8	10	53.9	42.2	63	106	138	6,305	10,582	13,814	59.2	45.6
Belgium . . . .	27	21	54	128.7	49.3	191	151	439	19,113	15,078	43,874	126.8	43.6
Bulgaria . . . .	1	1	1	99.0	111.7	2	2	2	198	163	191	121.6	104.0
Estonia . . . .	41	36	75	113.3	54.6	109	84	194	10,876	8,449	19,352	128.7	56.2
Finland 1) . . . .	10	10	10	102.3	97.1	157	121	518	15,693	12,100	51,840	129.7	30.3
France . . . .	27	23	71	119.5	38.3	26	110	...	2,565	10,976	...	...	...
N. Ireland . . . .	10	6	27	160.6	36.7	51	85	...	5,136	8,532	...	...	...
Hungary . . . .	19	16	22	120.7	87.0	40	49	54	3,990	4,888	5,398	81.6	73.9
Italy 2) . . . .	18	21	32	88.2	57.0	283	208	385	28,263	20,812	38,524	135.8	73.4
Latvia . . . .	103	78	139	130.9	73.8	3,97	314	671	39,656	31,442	67,135	126.1	59.1
Lithuania . . . .	135	106 1)	200	128.1	—	75	31	225	7,496	3,086	22,503	242.9	33.3
Netherlands . . . .	12	5	33	235.7	34.9	564	1,127	...	56,431	112,745	...	...	...
Poland . . . .	237	231	279	102.3	84.7	123	74	...	12,322	7,402	...	...	...
Rumania . . . .	45	54	50	84.1	90.4	83	72	175	8,271	7,243	17,482	114.2	47.3
Czechoslovakia . . . .	18	16	40	109.8	44.4	...	...	...	...	...	...	...	...
U. S. S. R. 3) . . . .	5,288	6,202	4,006	85.3	132.0	12,125	8,448	...	1,212,546	844,797	...	...	...
Egypt . . . .	3	2	3	148.1	124.3	25	15	18	2,494	1,501	1,822	166.1	136.9
TOTALS . . . .	6,010	6,847	5,082	87.8	118.3	—	—	—	—	—	—	—	—

## Linsced.

	Thousand bushels of 56 pounds												
Austria . . . .	3	5	6	54.2	40.9	9	20	23	17	36	41	45.7	40.1
Belgium . . . .	27	21	54	128.7	49.3	143	113	263	256	202	470	126.5	54.5
Bulgaria . . . .	1	1	1	99.0	117.7	6	6	4	11	11	7	100.7	165.2
Estonia . . . .	41	36	75	113.3	54.6	136	86	198	243	153	354	159.0	68.8
France . . . .	27	23	71	119.5	38.3	140	125	372	250	224	665	111.6	37.5
Italy 2) . . . .	18	21	32	88.2	57.0	50	69	143	90	124	255	72.4	35.1
Latvia . . . .	103	78	139	130.9	73.8	247	197	359	441	352	640	125.4	68.9
Lithuania . . . .	135	106 1)	200	128.1	—	464	350	745	829	626	1,331	132.6	62.3
*Poland . . . .	237	231	279	102.3	84.7	...	919	1,417	...	1,641	2,531	...	...
Rumania . . . .	45	54	50	84.1	90.4	220	209	188	394	374	335	105.3	117.5
Czechoslovakia . . . .	18	16	40	109.8	44.4	60	53	140	107	95	250	112.7	42.8
*U. S. S. R. . . .	4) 6,348	7,784	5,238	—	—	...	...	5) 14,046	...	...	5) 25,081	...	...
Canada . . . .	244	454	489	53.8	49.9	380	1,370	2,026	679	2,446	3,619	27.8	18.8
United States . . . .	1,300	1,900	2,915	68.4	44.6	3,808	6,552	10,452	6,800	11,700	18,664	58.1	36.4
India . . . .	3,239	3,301	3,123	98.1	103.7	9,027	9,318	8,221	16,120	16,640	14,680	96.9	109.8
Egypt . . . .	3	2	3	148.1	124.3	27	16	20	49	28	35	174.6	140.2
Eritrea . . . .	4	2	—	150.0	—	20	17	—	35	30	—	119.2	—
Argentina . . . .	6) 6,852	6) 7,401	6) 7,448	92.6	92.0	29,476	29,291	42,388	52,636	52,303	75,694	100.6	69.5
*Uruguay . . . .	266	337	324	79.0	82.2	...	827	1,915	...	1,476	3,419	...	...
TOTALS . . . .	12,060	13,421	14,546	89.8	82.3	44,213	47,792	65,542	78,957	85,346	117,040	92.5	67.5

†) The two dates mentioned refer to the years in which the harvest took place in the Northern and Southern hemispheres respectively. — \* Countries not included in the totals. — §) Production expressed in terms of air-dried stalks. — 1) Flax and hemp. — 2) The figures from 1931 have been calculated taking into account the results of the new agricultural survey. — 3) "Dolgunetz". — 4) Area sown up to 10 June; that of the plan is 7,032,000 acres. — 5) Average 1927-30. — 6) Area sown.

estimate for Argentina. The last revisions in the United States and Canada involve only negligible modifications and confirm the fact that production has been distinctly small.

On the whole the world crop of 1933 appears to be the smallest in the last ten years, being almost the same as the very small crop of last year.

The exceptionally small crops in both Argentina and North America have contributed to this result. In Europe, on the other hand, production has been satisfactory and in India normal.

The quantity of linseed available in Argentina for export in 1933-34 is estimated at 26.5 million centals (47.5 million bushels).

*Linseed.*

Years	Production in Argentina		Export from Argentina		Net Import of Europe and North America	
	(centals)	(bushels of 56 lb.)	(centals)	(bushels of 56 lb.)	(centals)	(bushels of 56 lb.)
Millions						
1925. . . . .	25.4	45.3	21.2	37.8	32.4	57.9
1926. . . . .	42.1	75.2	36.8	65.7	43.0	76.8
1927. . . . .	45.2	80.7	41.7	74.4	45.7	81.5
1928. . . . .	46.3	82.7	42.8	76.4	47.2	84.2
1929. . . . .	43.9	78.3	35.7	63.8	45.6	81.5
1930. . . . .	28.0	50.0	25.8	46.1	31.5	56.3
1931. . . . .	43.9	78.3	41.4	74.0	45.6	81.5
1932. . . . .	49.8	89.0	44.5	79.5	47.0	83.9
1933. . . . .	29.3	52.4	1) 26.2	1) 46.8	1) 36.2	1) 64.6
1934. . . . .	29.5	52.8	...	...	...	...

(1) Up to end of October.

Of the other large exporters India, consequent on the record exports of the second half of the current year, can place on the international market only very limited quantities until the new crop. It is confirmed that the latter will be harvested on an area larger than that of last year and that germination has been very satisfactory. The results of the Indian crop, however, remain dependent on the weather and particularly on the winter rains.

Supplies in Uruguay are also limited, given that the area sown this season was 21.0 % smaller than that last year and 17.8 % below the average.

World trade in linseed thus depends, until the new crop in India comes on the market, almost wholly on Argentine supplies.

*Prices of la Plata linseed in London (delivery Hull).*

(Gold francs per quintal)

Annual average	1927 . . . . .	38.35	
	1928 . . . . .	39.02	
	1929 . . . . .	45.29	
	1930 . . . . .	32.27	
	1931 . . . . .	20.18	
		1932	1933
Monthly average	January . . . . .	15.21	15.14
	February . . . . .	15.61	14.46
	March . . . . .	15.92	14.29
	April . . . . .	15.06	14.55
	May . . . . .	14.42	15.99
	June . . . . .	14.10	17.73
	July . . . . .	14.28	19.31
	August . . . . .	14.85	18.29
	September . . . . .	16.24	16.94
	October . . . . .	15.20	15.66
	November . . . . .	14.56	15.79
	December . . . . .	14.77	...

On the whole world prices of linseed are expected to maintain a certain firmness in the next few months.

A. d. F.

\* \* \*

*Argentina* : The first official estimate of linseed production is almost the same as that of last year and 30.5 % below the five-year average. This poor crop is due partly to reduction in areas sown and still more to bad weather, which caused serious damage in the principal producing areas.

## HEMP

COUNTRIES	AREA					PRODUCTION				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver- age				1932	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	

### Fibre.

Germany 1)	1	1	1	65.9	35.3	—	—	—	—	—
Austria 2)	1	1	1	91.4	86.5	1,521	1,631	1,765	93.2	86.2
Bulgaria	12	11	9	111.0	130.5	5,049	3,906	3,034	129.3	164.4
France	7	6	11	117.4	63.7	5,693	5,311	10,057	107.2	56.6
Hungary 3)	21	17	20	127.2	104.9	...	10,965	13,084	...	...
Italy 4)	141	133	203	106.4	69.6	127,683	121,907	177,868	104.7	71.8
Poland	79	79	77	100.6	103.3	...	22,274	42,372	...	...
Rumania	115	103	97	111.2	118.5	...	57,137	42,628	...	...
Czechoslovakia	19	19	23	98.8	83.1	11,695	13,134	12,623	89.0	92.6
U.S.S.R.	5) 1,344	2,333	2,175	—	—	...	...	6) 708,089	...	...
Syria and Lebanon	2	7	6	35.6	37.0	...	3,108	3,996	...	...

### Hempseed.

Austria	7)	7)	7)	75.0	47.6	110	154	210	71.4	52.5
Bulgaria	12	11	9	111.0	130.5	3,968	4,272	2,348	92.9	169.0
France	7	6	11	117.4	63.7	670	1,874	3,157	35.8	21.2
Hungary 3)	21	17	20	127.2	104.9	...	7,253	7,726	...	...
Italy	—	—	—	—	—	4,237	5,324	7,229	79.6	58.6
Poland	79	79	77	100.6	103.3	...	31,264	46,640	...	...
Rumania	115	103	97	111.2	118.5	44,093	42,606	23,614	103.5	186.7
Czechoslovakia	19	19	23	98.8	83.1	7,526	8,357	9,268	90.1	81.2
U.S.S.R.	5) 1,344	2,333	2,175	—	—	...	...	7) 1,020,148	...	...
Syria and Lebanon	2	7	6	35.6	37.0	...	1,190	1,089	...	...

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Unmixed crops. — 4) The figures from 1931 have been calculated taking into account the results of the new agricultural survey. — 5) Area sown up to 10 June; that of the plan is 2,217,000 acres. — 6) Average 1927-30. — 7) Area inferior to 500 acres.

## HOPS

The expectation of a heavy demand in the United States following on the abolition of prohibition led this year to a general increase in area not only in the United States but in Europe. The abundant outturn in Europe contrary to the first rather bullish forecasts following on the stormy weather of autumn, caused a decline in prices on all markets.

*Yugoslavia*: Area and production are not yet known for this year. After a gradual but severe reduction in areas sown and in production (from 22,700 acres in 1928 to 3,600 in 1932 and from 114,600 centals to 17,600 centals) in recent year following the difficulties in moving the crop a recovery may be expected for the current year.

## Hops.

COUNTRIES	AREA					PRODUCTION						
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933			
				1932	Aver- age				1932	Aver- age		
											= 100	= 100
1,000 acres					1,000 pounds							
Germany . . . . .	24	20	1)	32	119.4	74.4	14,977	10,929	1)	23,864	137.0	62.8
Belgium . . . . .	2	1		3	116.4	54.4	1,765	1,531		3,816	115.2	46.2
France . . . . .	5	4		9	105.0	48.4	3,645	1,711		8,262	213.1	44.1
Engl. and Wales . . . . .	17	17		22	102.2	76.6	24,192	21,056		28,627	114.9	84.5
*Hungary . . . . .	2)	2)		1	148.0	66.5	...	141		265	...	...
*Poland . . . . .	9	5	3)	7	202.7	144.3	...	3,436	3)	3,812	...	...
Czechoslovakia . . . . .	25	24		36	107.4	70.2	12,914	16,583		26,083	77.9	49.5
United States . . . . .	27	22		23	122.9	116.4	37,724	24,120		29,331	156.4	128.6
TOTALS . . . . .	100	88		125	110.8	80.4	95,217	75,930		119,983	125.5	79.7

\*) Countries not included in the totals. — 1) Average 1929 to 1931. — 2) Area inferior to 500 acres. — 3) Average 1927 to 1929.

## TOBACCO

*Bulgaria:* Despite the abundant rains of November harvesting was carried out under good conditions and the leaves were adequately dried.

*United States:* The November estimates of area and production of tobacco in 1933 are as follows:

CLASSIFICATION	Area (000 acres)			% 1933 1932 = 100	Production (000 lb.)			% 1933 1932 = 100
	1933	1932	1931		1933	1932	1931	
Flue-cured . . . . .	885.1	621.7	981.0	142.4	705,446	373,631	664,967	188.8
Fire cured . . . . .	172.4	160.7	237.0	107.4	136,193	126,167	190,765	108.0
Air-cured, light . . . . .	540.7	461.3	556.0	117.2	432,581	334,932	483,764	129.2
Air-cured, dark . . . . .	53.5	51.8	88.4	103.3	41,870	41,108	75,867	102.2
Cigar filler . . . . .	54.5	71.7	74.9	76.2	50,877	67,770	91,685	75.2
Cigar binder . . . . .	27.9	46.9	67.8	59.5	34,843	64,472	87,117	54.1
Cigar wrapper . . . . .	6.1	6.9	8.7	89.3	6,243	6,910	8,396	90.3
Miscellaneous . . . . .	0.5	0.8	1.7	50.0	308	522	1,665	50.0
TOTAL . . . . .	1,740.7	1,421.8	2,015.5	122.4	1,408,361	1,015,512	1,604,226	138.7

*Cyprus:* At the middle of November picking and drying operations were finished. Production was reported to be somewhat below the average but quality was stated to be good and demand active.



*Tobacco.*

COUNTRIES	AREA					PRODUCTION						
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933			
				1932	Aver- age				1932	Aver- age		
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100			
*Germany 1). . . . .	30	27	2)	26	110.6	115.5	...	62,224	2)	51,105	...	...
Belgium . . . . .	7	7		7	101.4	90.7	13,726	13,688		15,290	100.3	89.8
Bulgaria . . . . .	57	47		75	120.4	76.2	38,581	31,213		56,724	123.6	68.0
Spain . . . . .	12	10		7	120.7	165.8	14,330	16,605		10,074	86.3	142.2
Greece . . . . .	3) 190	157		231	121.0	82.0	3) 80,084	64,498		132,179	124.2	60.6
*Hungary . . . . .	44	61		58	72.1	75.7	...	87,074		69,732	...	...
Czechoslovakia . . . . .	25	25		17	100.4	146.8	30,479	37,623		20,922	81.0	145.7
United States . . . . .	1,700	1,400		1,907	121.4	89.1	1,396,200	1,022,600		1,474,688	136.5	94.7
Japan . . . . .	84	84		90	100.2	92.8	139,200	138,230		145,584	100.7	94.7
Syria and Lebanon . . . . .	8	11		10	74.4	81.0	4,199	5,669		6,397	74.1	65.6
Algeria . . . . .	49	59		61	83.2	81.1	33,069	40,663		43,363	81.3	68.4
TOTALS . . . . .	2,132	1,800		2,405	118.4	88.5	1,749,868	1,370,789		1,910,221	127.6	91.6

\* ) Countries not included in the totals. — 1) Production for sale. — 2) Year 1931. — 3) Unofficial estimate.

**OTHER PRODUCTS**

**Cacao.**

*St. Lucia:* Picking was in progress in September. A good crop was expected.

*Gold Coast:* District reports up to mid-November indicated that the major crop was less than that of 1932-33. The latest estimates are as follows, in millions of pounds:

Eastern Province . . . . .	154
Ashanti . . . . .	134
Central Province . . . . .	85
Transvolta and British Togoland . . . . .	24
Western . . . . .	24

On the basis of these divisional estimates the total major crop is thus about 421 million pounds.

Generally favourable conditions were broken by rainy periods. Picking was proceeding in all districts. At the middle of November progress in the various provinces was as follows. In Ashanti 82 % of the crop was ripe, 44 % was already harvested, and 32 % had been marketed.. In the Western Province 50 % was ripe, 30 % had been harvested and 12 % marketed. In the Central Province 50 % was ripe and 25 % harvested. In the Eastern Province 60 % of the crop was ripe, 42 % harvested and 25 % marketed.

Road checks show very much smaller movement up to 18 November than in the same period of 1932. The statistics of unloadings and offloadings at railway stations also show a great decline with reference both the same period in 1932 and to the corresponding average for the four years ending 1932. Total exports from all ports up to 15 November were only 42 million pounds against 64 million to the same date in 1932. These shipments were made up of old 1932-33 main crop, 1933 mid crop and new main crop.

Up to 8 November not less than 67 million pounds of new main crop had reached the market. The general movement was later, due to the lateness of the crops and unfavourable harvesting conditions in some districts. Up to mid-November there had been no general hold-up of the crop but the low prices tended to delay marketing by those farmers who can afford to wait and are sufficiently optimistic to expect an increase.

Size of beans in the new main crop exported was larger than for the corresponding period of last year, the numbers of beans per 14 cubic inches, averaged for all consignments sampled for all ports, having been 124.9 against 130.0 in October 1932.

Shipments in October and the first half of November showed a steady improvement in purity.

The weighted mean purity of the cacao examined at the ports during the first half of the month was 88.7 an improvement of 6.1 points over October shipments. About 4 % of the tonnage shipped was over 95 % purity and over 45 % was over 90 %. Reports from up-country showed that poor fermentation is general and cacao coming on the market contained a high percentage of slaty and underfermented beans, the low prices and absence of inducement to careful preparation having reacted on the farmers' interest in improving quality.

## Tea.

*India* : In North India weather in October was seasonable and crop prospects were fair; to the end of that month outturn was a little over 33  $\frac{1}{4}$  million pounds lower than that to the same date in 1932. In South India the earlier part of October was unduly wet and dull but an improvement subsequently set in and prospects were better; outturn up to the end of October showed a decrease of 7.94 %.

## Colza and sesame.

*Rumania* : The area under winter colza up to 15 November is officially estimated at 31,900 acres against 13,100 and 61,600 at the same date in 1932 and 1931 respectively.

*India* : At the end of November condition and prospects of sesame were reported to be fairly good.

## Groundnuts.

*Egypt* : Harvesting in early as well as normal areas is progressing. The crop has improved since last month owing to favourable weather. The yield is expected to be about 9 % below the average.

# Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1933	1932	Average 1927 to 1931	% 1933		1933	1932	Average 1927 to 1931	% 1933	
				1932	Aver. age				1932	Aver- age
			1,000 ounces					= 100	= 100	1,000 pounds
Bulgaria . . . . .	27	25	40	106.3	68.2	2,866	2,876	4,303	99.7	66.6
Spain . . . . .	...	13	24	...	...	1,014	1,199	1,727	84.6	58.7
France . . . . .	16	18	45	90.9	36.7	2,079	2,176	5,161	95.6	40.3
Italy . . . . .	519	608	919	85.3	56.5	75,431	84,318	107,468	89.5	70.2
Korea . . . . . { s)	220	227	203	96.9	108.1	30,016	29,272	24,778	102.5	121.1
{ t)	133	115	110	115.8	133.4	15,511	11,685	9,038	132.8	171.6
Japan . . . . . { s)	2,864	2,748	2,679	104.2	106.9	414,215	383,535	421,892	108.0	98.2
{ t)	3,459	3,136	3,487	110.3	99.4	394,384	356,810	388,873	110.5	101.4
Syria and Lebanon	51	61	91	84.7	53.1	4,409	4,880	7,265	90.3	60.7
TOTALS . . .	\$) 7,302	6,951	7,598	105.2	96.3	939,925	876,751	970,505	107.2	96.8

\*) Countries not included in the totals. — s) Spring cocoons. — t) Summer-autumn cocoons — §) In calculating the totals account has been taken of the probable quantities of eggs prepared for incubation in some countries for which estimates of production but not those of eggs are so far available.

## FODDER CROPS

*Estonia* : Fodder production this year was below the average of the last ten years feed conditions for dairy cattle are consequently not good and milk production has diminished.

*France* : November was again very rainy over the whole territory. A very severe fall in temperature occurred in first decade of December. It is to be feared that meadows and even root crops have suffered from these conditions but exact information cannot yet be given on this subject.

The following table indicates the fodder production of 1933 excluding that of meadows and pastures, according to the provisional data now established :

	Area (000 acres)				
	1933	1932	Average 1927-31	1932 = 100	Average = 100
Mangolds . . . . .	2,062	2,091	1,998	98.6	103.2
Turnips . . . . .	505	503	506	100.5	99.9
Kohl-rabi . . . . .	563	604	577	93.3	97.7
Total . . . . .	3,130	3,198	3,081	97.8	101.5
Temporary meadows (legumes) . . . . .	7,316	7,212	7,139	101.5	102.5
Temporary meadows (grasses and legumes) . . . . .	1,212	1,252	1,118	96.8	108.4
Annual green fodder (1) . . . . .	1,761	1,758	1,806	100.1	97.5
Permanent meadows (2) . . . . .	13,748	13,526	13,250	101.6	103.8
Total . . . . .	24,037	23,748	23,313	101.2	103.1

(1) Including fodder maize fed off.

(2) Not including pasture and meadows.

	Production (000 centals)				% Average = 100
	1933	1932	Average 1927-31	1932 = 100	
Mangolds . . . . .	619,864	675,350	592,959	98.1	104.5
Turnips . . . . .	82,126	95,540	78,740	86.0	104.3
Kohl-rabi . . . . .	142,033	172,499	134,403	82.3	105.7
<i>Total . . .</i>	<i>844,023</i>	<i>943,389</i>	<i>806,102</i>	<i>89.5</i>	<i>104.7</i>
Temporary meadows (legumes) . . . .	226,089	276,875	263,030	81.7	86.0
Temporary meadows (grasses and le- gumes) . . . . .	31,335	40,422	32,412	77.5	96.7
Annual green fodder (1) . . . . .	251,772	299,836	270,970	84.1	92.9
Permanent meadows (2) . . . . .	361,867	449,706	412,595	80.5	87.7
<i>Total . . .</i>	<i>871,063</i>	<i>1,066,839</i>	<i>979,007</i>	<i>81.7</i>	<i>89.0</i>

	Production (000 short tons)				% Average = 100
	1932	1931	Average 1927-31	1932 = 100	
Mangolds . . . . .	30,993	33,767	29,648	98.1	104.5
Turnips . . . . .	4,106	4,777	3,937	86.0	104.3
Kohl-rabi . . . . .	7,102	8,625	6,720	82.3	105.7
<i>Total . . .</i>	<i>42,201</i>	<i>47,169</i>	<i>40,305</i>	<i>89.5</i>	<i>104.7</i>
Temporary meadows (legumes) . . . .	11,304	13,844	13,151	81.7	86.0
Temporary meadows (grasses and le- gumes) . . . . .	1,567	2,021	1,621	77.5	96.7
Annual green fodder (1) . . . . .	12,588	14,969	13,548	84.1	92.9
Permanent meadows (2) . . . . .	18,093	22,485	20,629	80.5	87.7
<i>Total . . .</i>	<i>43,552</i>	<i>53,319</i>	<i>48,949</i>	<i>81.7</i>	<i>89.0</i>

(1) Including fodder maize fed off.

(2) Not including pasture and meadows.

On the whole the area of fodder crops continues to increase but this expansion is slowing down; from 1932 to 1933 it has been scarcely 0.9 % for fodder crops and grass as a whole. On the other hand it is to be noted that it is especially permanent meadows or meadows of medium duration that have continued to extend, while on the whole annual crops have remained stationary or have fallen off.

Production is small, as was expected, but fodder supplies for the winter have increased due to the fact that the autumn rains brought a recovery of pastures and meadows.

*Great Britain and Northern Ireland* : In England and Wales the weather during the greater part of November was open and favourable for agricultural operations. Considerable progress was made with cultivation and all work on the land was well forward. The pastures provided a bite during November and no excessive demands upon winter keep were reported. Mangolds are of good quality although somewhat smaller than usual. With the exception of a few acres, lifting had been completed under favourable conditions. A considerable proportion of the turnip and swede crop is below normal as regards size and quality and the roots in many parts of the country are not likely to keep well if clamped.

In Scotland the mild conditions and occasional showers favoured the continued growth of root crops, which showed a slight improvement. Pastures regained a fresh appearance and in most areas grass continued to grow throughout the month. The supplies of hay and straw are fairly good but in some districts it is thought that straw may become scarce before the end of the feeding season. A large part of the turnip crop has not yet been lifted and the roots generally are exceptionally small. Supplies of concentrated feed are quite sufficient except maize.

*Hungary* : Save for a single department supplies of fodder of all kinds are considered as everywhere adequate for winter. In many localities a surplus over local requirements is reported.

Health of stock is generally satisfactory.

*Italy* : Crops were favoured by the rains in November. Meadows and pastures have given a good outturn, enabling notable economies in winter supplies to be made.

*Lithuania* : Production of mangels in 1933 was 17,002,000 centals (850,000 short tons) against 24,163,000 (1,208,000) in 1932 and 15,434,000 (772,000) on the average of 1930 and 1931 ; percentages 70.4 and 110.2.

*Algeria* : The rains at the end of October improved the condition of pasture and meadows. Precipitation was however, inadequate up to the end of November in the east of Constantine, and condition was there frequently bad.

*Egypt* : Sowing of *bersim* is almost ended. Some of the cultivators have purposely delayed sowing in order to avoid attacks of cutworm. The first cutting has been started in the early-sown areas. Germination and growth are satisfactory.

*Tunisia* : Grazing tracts and pastures greened again following on the rains of November. In the north at the end of the month sowings of fodder crops in dry areas had not yet sprouted but rains would improve the situation ; in the centre pastures were at the end of November still bare.

## LIVESTOCK AND DERIVATIVES

### Condition of livestock and dairy production.

*Bulgaria* : Health of livestock toward mid-November was very good. In some areas fowl cholera was reported.

*France* : Conditions of maintenance of livestock at the end of November improved considerably. Abundant rainfall revived the pastures and removed numerous com-

plaints regarding winter supplies of fodder. Health also improved and foot-and-mouth disease was decreasing. The very severe cold at the beginning of December should also somewhat modify this situation.

Milk production was diminishing

*Great Britain and Northern Ireland:* Milk yields in England and Wales were normal for the time of the year.

In Scotland, the milk supply in November generally showed the usual seasonal reduction but in several areas the yield has been rather below the average for the season.

Production of eggs in England and Wales is estimated as follows:

Year (June-May)	Hen eggs	Duck eggs (Millions)	Total
1928-29 . . . . .	2,135	67	2,202
1929-30 . . . . .	2,297	62	2,359
1930-31 . . . . .	2,564	63	2,627
1931-32 . . . . .	2,803	67	2,870
1932-33 . . . . .	3,024	70	3,094

The increase of over 100 % shown in the total output of eggs since 1924-25 (1,493 million) is due partly to the increased individual output, but mainly to the increase in the number of fowls kept on agricultural holdings. The above figures include eggs used for hatching, which in 1932-33 were estimated to have been 85 million hen eggs and 4 million duck eggs.

*Netherlands:* In relation to the favourable dry weather in November the supplies of fodder for dairy cattle are good. At the end of November dairy cows were almost all supplied. The supplies for winter are sufficient; there is enough hay and siloed grass while in addition there is here and there unsaleable horticultural produce. Given the increase in prices of concentrated feeds little these will be used. In the majority of provinces the milk yield in November was average for the month.

*Tunisia:* Stock are still very thin owing to the scarcity of grass caused by the long drought; they are, however, gradually improving in condition due to the rains in November, particularly in the south, where the rains were earlier and the animals are generally in fairly good condition. In the latter region lambing, still in progress at the end of November, occurred under fairly good conditions, lactation having reflected the better feeding conditions; on the other hand, lambing in the centre took place under bad conditions in the latter half of November in the middle of the rainy season, when the ewes were still in poor condition; in the north, where lambing occurred earlier and under good conditions but there were heavy losses of young lambs.

Health was generally good.

*United States:* Total shipments of stocker and feeder cattle from markets into the Corn Belt for the four months July to October, were the smallest for the period in at least 15 years, being about 100,000 head or over 10 % smaller than in 1927, when the next smallest shipments occurred. Compared with last year all of the decrease was in

the area east of the Mississippi River where the shipments last year were quite large. An increase occurred in October owing to increased feed supplies and prices.

For the four months July to October the shipments of feeder lambs inspected at livestock markets into the Corn Belt States were a little larger than the very small shipments for this period in 1932 but much the smallest for any other year since 1919 at least.

*Algeria*: Condition of stock improved in the majority of areas following on the rains of October and November, which revived pastures; it remained mediocre in the east of Constantine, where humidity was still quite inadequate at the end of November and only stall-fed animals were in satisfactory condition.

*Union of South Africa*: At the end of October, before the breaking of the drought by heavy rains, conditions were described as deplorable, the farming community suffering from abject poverty and even being threatened with starvation.

In Cape Province absolute drought prevailed save in parts of the southwestern and south coast districts and in the coastal districts of the eastern province. The grazing that was available along the west coast of the northwest and in some of the Karroo districts was exhausted; trek stock from the Orange Free State and other drought-stricken areas were dying in large numbers and farmers were being forced to seek fresh pasturage. Stock were still in good condition in the south-western districts and along the south coast but over the remainder of the province they were in a miserable condition and heavy losses were being suffered. Stock had to be fed with mealies and other purchased feed. The blow-fly was again a serious menace and farmers who had not yet sheared were being forced to do so. In the sweet-veld areas of the Eastern Province the high rate of mortality amongst sheep was causing concern and was attributed to internal parasites, particularly the nodular worm. Many cattle were dying of hunger, a phenomenon previously unknown in these areas.

In Bechuanaland and Griqualand West, where many animals had died from eating poisonous plants or from *gallamsiekte*, deplorable conditions prevailed. Both the Orange and Vaal Rivers had ceased to flow, with the result that prospects for crops under irrigation were very poor. Severe frosts were experienced in this area and in many parts of the Karroo districts and much damage was caused in some cases.

In the districts bordering the Natal and Transvaal provinces and further northwards into the lowveld good and even heavy rains fell in October. Scattered showers also fell in various parts of Natal, the Transvaal and the Orange Free State but by the end of October conditions showed little improvement. Sheep were still in fair condition in the eastern Transvaal highveld but cattle were thin. Complaints of water shortage were general and stock were being kept alive with mealies supplied by the Government.

## LATEST INFORMATION

*Argentina* (telegram of 20 December): Harvesting and threshing of wheat and other cereals are in full swing under good conditions. The estimates of production previously communicated are confirmed.

Development of maize is good but rain is now desirable.

Health of livestock is excellent and pastures are in good condition.

*United States* (telegram of 21 December) : The area sown to winter wheat is estimated at 41,002,000 acres against 42,692,000 last year and 43,838,000 on the average for 1927-31. The decrease in sowings is thus 4.0 % with respect to 1932 and 5.5 % with respect to the mean. Crop condition on 1 December, according to the system of the country is estimated at 74.3 against 68.9 on 1 December 1932.

The area sown to rye is estimated at 5,091,000 acres against 4,439,000 last year and 4,284,000 on the average, the increase being 14.7 % and 18.8 % with respect to these figures. Crop condition on 1 December was 69.9 against 76.3 on 1 December 1932.



# TRADE

COUNTRIES	OCTOBER				THREE MONTHS (August 1-October 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	243	203	0	0	811	388	0	0	1,808	0
Hungary . . . . .	1,903	322	0	0	5,258	1,323	0	0	3,254	2
Lithuania . . . . .	0	0	0	0	0	0	0	0	2	0
Poland . . . . .	53	20	146	68	99	44	194	132	855	483
Rumania . . . . .	...	...	...	...	1) 0	2) 22	1) 2	2	24	9
Yugoslavia . . . . .	99	40	...	...	209	240	0	0	503	0
U. S. S. R. . . . .	...	...	...	...	9) 4,881	9) 3,635	...	9) 1,627	10) 10,862	10) 1,373
Canada . . . . .	13,984	24,116	0	11	30,975	51,216	4	20	144,086	31
United States . . . . .	15	1,938	668	575	53	5,763	1,874	1,224	11,502	5,582
Argentina . . . . .	3,049	1,907	—	—	16,912	6,158	—	—	76,324	—
Chile . . . . .	...	...	...	...	1) 0	1) 2	1) 368	1) 0	9	858
Turkey . . . . .	...	...	...	...	1) 134	1) 9	1) 0	1) 0	260	0
Algeria . . . . .	571	355	57	185	1,993	2,366	112	276	5,331	908
French Morocco . . . . .	...	...	...	...	2) 448	2) 20	2) 282	2) 79	3,389	344
Tunis . . . . .	37	472	174	0	408	1,684	0	0	72,197	0
Australia . . . . .	1,389	3,120	0	0	8,389	7,430	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	1,726	2,663	1,625	1,801	4,517	6,596	4,290	5,604	12,540	18,433
Austria . . . . .	0	0	302	397	0	0	966	1,155	0	7,180
Belgium . . . . .	60	126	2,035	2,738	243	547	6,047	6,468	2,163	25,724
Denmark . . . . .	0	7	604	661	9	13	2,189	2,224	15	6,202
Spain . . . . .	0	0	0	0	0	0	0	0	0	0
Estonia . . . . .	0	0	0	0	0	0	0	0	0	0
Irish Free State . . . . .	0	0	1,058	553	0	0	2,853	1,870	40	8,373
Finland . . . . .	0	0	95	84	0	0	311	238	0	906
France . . . . .	489	13	1,962	1,883	1,301	15	5,011	10,924	49	24,571
Gr. Brit. and N. Irel. . . . .	31	13	11,360	11,779	123	99	32,476	31,449	553	122,626
Greece . . . . .	0	0	639	1,036	0	0	2,286	2,978	0	11,790
Italy . . . . .	4	4	633	780	7	13	1,744	1,982	13	11,206
Latvia . . . . .	0	0	0	2	0	0	0	15	2	18
Norway . . . . .	0	0	450	300	0	0	992	743	0	3,993
Netherlands . . . . .	2	40	1,947	1,755	4	234	5,855	4,226	514	15,604
Portugal . . . . .	—	—	...	...	—	—	1) 44	1) 159	—	505
Sweden . . . . .	0	0	110	247	0	7	340	1,021	13	1,940
Switzerland . . . . .	0	2	1,102	1,096	4	11	3,375	3,177	15	11,473
Czechoslovakia . . . . .	0	0	2	60	2	2	82	390	2	6,594
China . . . . .	...	...	...	...	1) 0	1) 0	1) 1,076	1) 597	0	26,890
India . . . . .	4	4	0	...	11	11	0	0	46	1,060
Japan . . . . .	—	—	950	750	—	—	2,352	1,847	—	11,667
Syria and Lebanon . . . . .	117	26	15	7	262	134	62	44	278	254
Egypt . . . . .	2	0	0	0	2	2	2	0	9	4
Union of South Africa . . . . .	...	...	...	...	1) 0	1) 0	1) 4	1) 97	0	161
New Zealand . . . . .	...	...	...	...	...	...	...	...	423	736
Totals . . . . .	23,778	35,391	25,934	26,788	77,055	87,984	75,193	80,575	350,584	300,645
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	7	20	0	0	13	44	0	0	66	0
Hungary . . . . .	379	108	0	0	1,437	298	0	0	1,651	0
Lithuania . . . . .	11	0	0	0	11	2	0	0	35	0
Poland . . . . .	1,299	774	62	31	2,564	1,779	86	40	6,572	216
Rumania . . . . .	...	...	...	...	1) 0	1) 9	0	0	9	0
U. S. S. R. . . . .	...	...	...	...	9) 703	9) 1,345	—	—	10) 5,199	—
Canada . . . . .	514	227	0	0	1,228	1,133	0	0	1,605	0
United States . . . . .	2	15	—	—	4	15	—	—	33	—
Argentina . . . . .	57	49	—	—	1,063	123	—	—	3,206	—
Turkey . . . . .	...	...	...	...	1) 143	1) 66	1) 0	1) 0	348	0
Algeria . . . . .	7	0	0	0	11	11	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	1,526	324	165	414	2,859	1,155	1,653	2,555	2,978	7,390
Austria . . . . .	0	0	0	7	0	0	2	97	0	496
Belgium . . . . .	2	4	1,204	267	11	112	1,969	624	368	2,465
Denmark . . . . .	0	0	800	798	0	0	2,328	2,141	0	5,776
Finland . . . . .	0	0	46	0	0	0	322	655	0	1,426
France . . . . .	0	0	2	26	0	0	42	194	0	465
Italy . . . . .	0	0	9	35	0	0	15	82	0	265
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Norway . . . . .	0	0	309	439	0	0	833	787	0	2,943
Netherlands . . . . .	0	4	209	370	7	18	1,166	1,235	75	4,330
Sweden . . . . .	0	0	4	0	0	0	18	231	15	271
Switzerland . . . . .	0	0	0	15	0	0	7	79	0	324
Czechoslovakia . . . . .	0	0	2	4	13	2	4	84	66	29
Totals . . . . .	3,804	1,525	2,812	2,406	10,067	6,112	8,445	8,804	22,239	30,645

COUNTRIES	OCTOBER				THREE MONTHS (August 1-October 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany	450	84	7	9	1,025	104	20	18	2,229	68
Belgium	2	4	53	9	13	13	88	29	53	66
Bulgaria	13	9	0	0	33	33	0	0	35	0
Spain	4	0	0	0	9	2	0	0	9	0
France	364	410	79	40	1,120	814	190	130	4,162	529
Hungary	209	132	0	0	465	340	0	0	864	0
Italy	537	381	40	20	999	1,314	101	51	3,697	304
Lithuania	2	2	0	0	9	4	0	0	26	0
Poland	15	26	0	0	31	60	0	0	234	0
Rumania	...	...	...	...	7	9	0	0	13	2
Yugoslavia	4	9	0	0	11	18	0	0	57	0
Canada	1,008	1,036	9	2	3,034	2,438	33	4	9,566	49
United States	611	736	0	0	1,940	2,180	0	0	8,371	2
Argentina	306	66	—	—	527	198	—	—	1,623	—
Chile	...	...	...	...	0	0	4	0	4	476
India	20	31	0	0	68	126	0	0	340	2
Japan	664	423	0	0	1,797	1,182	7	0	6,094	15
Turkey	...	...	...	...	0	0	0	0	0	0
Algeria	77	37	11	4	190	134	22	9	520	71
Tunis	15	11	4	2	35	44	11	2	172	55
Australia	1,041	1,237	0	0	2,595	2,879	0	0	12,553	0
<i>Importing Countries:</i>										
Austria	0	0	128	119	0	0	185	196	2	578
Denmark	2	2	40	51	7	7	227	181	18	794
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	209	168	0	0	0	0	2	1,797
Finland	0	0	97	108	0	0	562	688	0	1,239
Gr. Brit. and N. Irel.	306	399	1,124	626	952	1,279	3,135	1,980	4,200	9,495
Greece	0	0	2	2	0	0	2	9	0	22
Norway	0	0	119	86	0	0	276	243	4	1,135
Netherlands	0	0	66	84	0	11	287	209	24	933
Portugal	—	—	...	...	—	—	31	51	—	218
Sweden	0	0	0	0	0	0	1	0	0	9
Czechoslovakia	0	0	0	26	2	2	9	123	7	437
Ceylon	—	—	31	37	—	—	90	97	—	384
China	...	...	...	...	22	49	260	765	1,193	5,741
Java and Madura	...	...	...	...	—	—	205	150	—	957
Indo-China	—	—	31	37	—	—	84	93	—	342
Syria and Lebanon	22	11	57	79	37	13	220	112	99	802
Egypt	0	0	7	11	0	0	24	101	2	205
French Morocco	...	...	...	...	0	0	0	9	18	84
Union of South Africa	...	...	...	...	0	0	0	0	2	7
New Zealand	...	...	...	...	0	0	2	0	2	258
Totals	5,472	5,046	2,112	1,522	14,928	13,259	6,372	5,589	56,216	27,076
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria	44	7	0	0	205	60	0	0	172	0
Spain	15	2	0	0	35	4	0	0	53	0
Hungary	198	106	0	0	509	134	0	0	1,504	0
Poland	470	410	0	0	913	948	0	0	3,558	0
Rumania	...	...	...	...	4,363	5,487	0	0	11,771	0
Czechoslovakia	225	875	0	0	375	1,440	0	0	3,516	2
U. S. S. R.	...	...	...	...	3,206	2,619	—	—	7,665	—
Canada	66	344	0	0	123	1,457	0	0	2,588	0
United States	130	536	0	0	531	1,426	—	—	4,398	—
Argentina	269	9	—	—	814	29	—	—	8,774	—
Chile	...	...	...	...	216	4	0	0	439	0
India	0	0	4	0	44	2	26	0	4	20
Syria and Lebanon	7	0	2	29	44	18	49	82	33	337
Turkey	...	...	...	...	289	287	0	0	990	0
Egypt	9	0	0	0	115	2	0	0	152	0
French Morocco	...	...	...	...	569	509	—	—	3,594	—
Tunis	4	463	29	4	44	1,387	57	18	2,758	40
Australia	0	9	0	0	320	20	0	0	1,420	0
<i>Importing Countries:</i>										
Germany	0	0	597	357	0	0	966	838	4	3,763
Austria	0	0	187	179	0	0	395	448	0	1,982
Belgium	172	231	827	1,323	326	527	2,919	2,643	1,400	9,083
Denmark	123	42	134	192	165	82	450	437	461	2,231
Irish Free State	4	0	0	7	9	0	66	2	2	139
France	0	0	461	1,058	0	0	1,706	2,665	4	7,641
Gr. Brit. and N. Irel.	0	7	2,743	1,695	11	20	6,358	4,273	40	13,558
Greece	0	0	0	2	0	0	2	2	0	20
Italy	0	0	95	51	0	0	176	104	0	593
Norway	0	0	44	29	0	0	161	37	0	150
Netherlands	0	0	2,000	1,508	0	7	4,365	2,782	112	8,807
Switzerland	0	0	212	558	0	0	344	1,036	0	4,268
Yugoslavia	15	0	0	0	101	2	0	0	95	4
Algeria	60	4	55	148	313	42	298	888	159	2,817
Totals	1,811	3,049	7,390	7,140	13,596	16,513	18,338	16,262	52,072	54,664

COUNTRIES	OCTOBER				THREE MONTHS (August 1-October 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	0	4	0	2	4	9	0	4	55	9
Hungary . . . . .	152	0	0	0	357	2	0	0	465	0
Lithuania . . . . .	0	0	0	0	0	0	0	0	0	0
Poland . . . . .	18	4	0	0	35	11	0	0	305	0
Rumania . . . . .	...	...	...	...	60	322	0	0	639	0
Czechoslovakia . . .	112	414	0	0	335	721	0	0	3,038	0
Yugoslavia . . . . .	15	0	0	0	33	0	0	0	0	0
Canada . . . . .	108	728	0	121	247	1,356	0	306	3,766	683
United States . . . .	9	141	9	0	84	626	11	0	1,217	29
Argentina . . . . .	644	560	—	—	1,698	1,803	—	—	10,384	—
Chile . . . . .	...	...	...	...	22	35	0	0	227	0
Algeria . . . . .	7	11	7	7	22	33	35	18	130	57
Tunis . . . . .	2	18	0	0	13	68	4	0	126	0
Australia . . . . .	2	20	0	0	7	60	0	0	93	2
<i>Importing Countries:</i>										
Germany . . . . .	306	0	7	4	690	0	46	20	234	423
Austria . . . . .	0	0	7	86	0	0	86	243	0	639
Belgium . . . . .	0	0	2	11	0	4	22	101	7	877
Denmark . . . . .	0	13	64	2	9	18	163	37	71	375
Estonia . . . . .	0	0	0	0	0	0	0	0	0	0
Finland . . . . .	0	0	29	0	0	0	134	9	2	163
France . . . . .	0	0	42	123	0	2	97	545	4	1,155
Gr. Brit. and N. Irel.	0	4	408	608	4	7	1,082	1,607	24	6,347
Italy . . . . .	0	0	311	315	0	0	518	778	0	2,683
Latvia . . . . .	0	0	0	0	0	0	0	0	11	0
Norway . . . . .	0	0	0	0	0	0	0	11	2	13
Netherlands . . . . .	0	0	110	216	4	2	384	536	26	2,610
Sweden . . . . .	0	7	159	40	0	11	370	192	46	580
Switzerland . . . . .	0	0	384	271	0	0	860	825	0	4,899
Totals . . . . .	1,375	1,924	1,539	1,806	3,624	5,090	3,812	5,232	20,873	21,544
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<div> <div> <div>THREE MONTHS (November 1-October 31)</div> <div>1932-33</div> <div>1931-32</div> <div>1932-33</div> <div>1931-32</div> </div> <div> <div>TWELVE MONTHS (Nov. 1-Oct. 31)</div> <div>1932-33</div> <div>1931-32</div> </div> </div>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	9	227	0	0	3,208	2,890	0	0	—	—
Rumania . . . . .	...	...	...	...	33,839	32,452	0	0	—	—
Yugoslavia . . . . .	1,171	276	0	0	14,249	1,825	0	26	—	—
United States . . . .	132	1,043	11	13	3,732	3,084	95	220	—	—
Argentina . . . . .	9,330	10,717	—	—	108,199	176,311	—	—	—	—
Java and Madura . . .	...	...	...	...	1,499	2,390	—	—	—	—
Indo-China . . . . .	1,045	880	—	—	6,303	3,459	—	—	—	—
Syria and Lebanon . .	18	0	0	4	22	7	324	37	—	—
Turkey . . . . .	...	...	...	...	267	355	0	0	—	—
Egypt . . . . .	0	2	0	0	216	15	4	46	—	—
Union of South Afr.	0	1,168	0	0	3,510	4,991	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	0	0	624	767	0	0	6,515	17,007	—	—
Austria . . . . .	0	0	882	434	0	0	11,409	7,628	—	—
Belgium . . . . .	209	115	1,426	1,049	1,396	1,385	17,754	18,700	—	—
Denmark . . . . .	0	0	617	840	0	0	13,592	21,231	—	—
Spain . . . . .	0	0	49	240	0	0	2,068	6,537	—	—
Irish Free State . . .	0	0	595	1,019	0	0	7,000	13,642	—	—
Finland . . . . .	0	0	132	49	0	0	1,257	595	—	—
France . . . . .	0	0	1,792	2,346	2	26	17,212	25,869	—	—
Gr. Brit. and N. Irel.	209	256	4,434	5,384	1,944	3,208	58,531	64,058	—	—
Greece . . . . .	0	0	0	0	0	0	611	3,382	—	—
Hungary . . . . .	97	29	0	0	4,405	93	0	939	—	—
Italy . . . . .	0	0	406	262	2,105	7	2,621	15,737	—	—
Norway . . . . .	0	0	337	362	0	0	3,501	9,092	—	—
Netherlands . . . . .	0	13	1,720	2,088	73	223	31,529	36,892	—	—
Poland . . . . .	0	0	11	9	0	0	88	126	—	—
Portugal . . . . .	—	—	...	...	—	—	1,294	1,290	—	—
Sweden . . . . .	0	0	655	344	0	0	5,562	6,135	—	—
Switzerland . . . . .	0	0	106	273	0	2	1,894	3,717	—	—
Czechoslovakia . . .	0	0	146	194	0	0	3,360	9,958	—	—
Canada . . . . .	0	0	386	434	20	13	4,337	3,891	—	—
Japan . . . . .	—	—	0	2	—	—	44	1,695	—	—
Tunis . . . . .	7	0	0	0	20	0	0	324	—	—
Totals . . . . .	12,227	14,726	14,329	16,122	180,009	232,736	190,599	263,776	—	—

1) See notes page 892.

COUNTRIES	OCTOBER				TEN MONTHS (January 1-October 31)				TWELVE MONTHS (January 1-DEC. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	7	134	0	0	179	732	0	0	871	0
Italy . . . . .	346	273	4	2	3,283	2,553	108	46	3,505	57
United States . . . . .	82	163	15	9	1,186	2,198	243	146	2,588	190
Brazil . . . . .	—	—	—	—	271	593	—	—	615	—
India . . . . .	2,037	1,682	146	29	37,349	43,078	529	505	48,001	683
Indo-China . . . . .	1,140	1,982	—	—	24,280	22,304	—	—	26,983	—
Siam . . . . .	2,879	2,749	—	—	30,693	28,105	—	—	34,106	—
Egypt . . . . .	68	82	0	0	1,590	269	7	708	1,032	710
<i>Importing Countries:</i>										
Germany . . . . .	66	84	280	1,109	745	902	5,761	7,163	1,047	8,481
Austria . . . . .	0	0	35	42	0	0	485	432	0	549
Belgium . . . . .	4	15	90	71	60	185	1,032	990	201	1,213
Denmark . . . . .	0	0	15	11	0	0	130	99	0	139
Estonia . . . . .	—	—	0	2	—	—	9	15	—	15
Irish Free State . . . . .	0	0	2	2	0	2	44	40	2	46
France . . . . .	29	55	948	802	677	659	10,875	6,764	860	8,327
Gr. Brit. and N. Irel. . . . .	24	9	163	306	150	146	2,101	2,326	163	2,747
Greece . . . . .	—	—	29	31	—	—	375	412	—	540
Hungary . . . . .	0	0	24	29	0	0	368	346	0	465
Latvia . . . . .	0	0	2	4	0	0	29	15	0	18
Lithuania . . . . .	0	0	2	2	0	0	13	15	0	20
Norway . . . . .	0	0	2	4	0	0	66	64	0	71
Netherlands . . . . .	104	218	115	181	1,093	1,579	3,117	2,430	1,854	2,606
Poland . . . . .	33	29	161	0	146	276	1,385	1,027	317	1,027
Portugal . . . . .	—	—	—	—	—	—	545	683	—	875
Sweden . . . . .	—	—	0	0	—	—	104	90	—	90
Switzerland . . . . .	0	0	40	53	0	0	472	317	0	432
Czechoslovakia . . . . .	0	0	110	46	0	0	1,076	866	0	1,096
Yugoslavia . . . . .	0	0	53	44	0	2	399	384	2	494
Canada . . . . .	0	0	11	11	15	9	578	531	9	593
Chile . . . . .	—	—	—	—	—	—	128	163	—	187
Ceylon . . . . .	0	0	776	743	2	4	8,270	8,810	4	10,384
China . . . . .	—	—	—	—	31	40	23,753	24,388	49	29,970
Java and Madura . . . . .	—	—	—	—	126	33	2,344	2,509	71	3,303
Japan . . . . .	9	18	364	220	320	650	2,729	2,798	1,034	3,369
Syria and Lebanon . . . . .	0	0	4	33	0	0	309	280	0	392
Turkey . . . . .	—	—	—	—	—	—	49	66	0	93
Algeria . . . . .	0	0	11	11	15	9	174	154	9	196
Tunis . . . . .	0	0	2	2	0	0	22	33	0	40
Union of South Africa . . . . .	—	—	—	—	—	—	794	639	0	895
Australia . . . . .	13	7	2	7	157	77	35	40	86	49
New Zealand . . . . .	—	—	—	—	—	—	49	42	0	64
<b>Totals . . . . .</b>	<b>6,841</b>	<b>7,500</b>	<b>3,406</b>	<b>3,806</b>	<b>102,368</b>	<b>104,405</b>	<b>68,507</b>	<b>66,336</b>	<b>123,409</b>	<b>80,426</b>
<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	2	0	0	2	18	0	2	4
Lithuania . . . . .	15	15	0	0	68	126	0	0	170	0
Argentina . . . . .	1,631	3,095	—	—	26,162	37,216	—	—	44,571	—
India . . . . .	1,285	157	0	0	6,025	1,429	0	0	1,728	0
Tunis . . . . .	0	0	0	0	2	22	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	542	983	29	13	7,004	8,179	20	9,841
Belgium . . . . .	7	9	181	364	60	128	2,518	2,912	139	3,671
Denmark . . . . .	—	—	24	22	—	—	377	401	—	534
Spain . . . . .	—	—	37	24	—	—	320	406	—	494
Finland . . . . .	0	0	7	9	0	0	73	51	0	75
France . . . . .	0	0	472	639	4	7	5,210	4,330	7	5,187
Gr. Brit. and N. Irel. . . . .	0	0	511	1,113	4	4	4,605	7,227	4	8,162
Greece . . . . .	0	0	20	7	0	0	110	66	0	88
Hungary . . . . .	2	0	0	0	4	9	31	0	9	29
Italy . . . . .	0	0	179	108	0	0	1,407	1,175	0	1,510
Latvia . . . . .	4	7	4	9	35	26	71	49	53	75
Norway . . . . .	0	0	0	44	0	0	357	337	0	403
Netherlands . . . . .	0	2	150	862	42	73	6,255	8,417	75	9,912
Poland . . . . .	0	0	11	9	2	2	287	148	4	271
Sweden . . . . .	—	—	46	106	—	—	714	919	—	957
Czechoslovakia . . . . .	0	0	29	68	2	2	355	604	2	798
Yugoslavia . . . . .	0	0	4	13	0	0	82	97	0	115
Canada . . . . .	101	203	11	0	344	205	11	256	205	256
United States . . . . .	—	—	1,409	245	—	—	6,396	3,708	—	4,502
Japan . . . . .	—	—	20	4	—	—	373	115	—	148
Australia . . . . .	0	0	130	18	0	0	456	419	0	450
<b>Totals . . . . .</b>	<b>3,045</b>	<b>3,488</b>	<b>3,789</b>	<b>4,647</b>	<b>32,783</b>	<b>39,264</b>	<b>37,030</b>	<b>39,816</b>	<b>47,013</b>	<b>47,482</b>

COUNTRIES	OCTOBER				TEN MONTHS (January 1-October 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	531	298	2	0	1,847	988	157	798	1,565	802
Denmark . . . . .	25,269	26,284	0	15	280,627	295,676	752	866	347,886	922
Estonia . . . . .	2,172	2,851	0	0	18,135	25,150	0	0	27,626	0
Irish Free State . . . . .	439	4,431	2	13	43,943	34,145	18	2,617	36,932	2,632
Finland . . . . .	2,500	2,346	390	0	22,064	28,177	1,047	0	32,020	0
Hungary . . . . .	963	567	0	0	6,647	3,609	0	0	4,495	0
Latvia . . . . .	2,840	4,680	0	0	31,032	36,861	0	0	41,002	2
Lithuania . . . . .	1,700	1,797	0	0	18,922	19,870	0	0	21,883	0
Norway . . . . .	11	148	0	7	769	2,119	110	86	2,421	90
Netherlands . . . . .	4,204	4,572	179	119	56,170	32,245	1,135	8,911	44,926	9,323
Poland . . . . .	410	33	22	49	2,884	2,679	24	860	2,707	866
Sweden . . . . .	3,805	2,213	13	2	30,278	25,490	71	26	29,875	33
U. S. S. R. . . . .	—	—	—	—	18,422	22,401	—	—	68,198	—
Argentina . . . . .	2,425	4,281	—	—	22,317	43,691	—	—	55,923	—
India . . . . .	11	33	49	42	157	203	412	353	260	428
Syria and Lebanon . . . . .	29	11	18	154	152	227	1,598	1,636	315	1,867
Australia . . . . .	21,705	23,847	0	0	144,926	166,251	—	0	229,105	0
New Zealand . . . . .	26,899	25,122	—	—	225,584	178,716	—	—	244,789	—
<i>Importing Countries:</i>										
Germany . . . . .	2	2	10,609	13,468	15	476	103,871	126,824	478	153,264
Belgium . . . . .	73	35	2,359	3,228	703	1,792	22,203	39,238	1,841	46,749
Spain . . . . .	0	2	7	4	15	40	11	31	44	42
France . . . . .	423	842	972	2,028	5,628	6,667	17,311	17,910	7,921	26,140
Gr. Brit. and N. Irel. . . . .	860	622	67,239	62,779	9,015	32,362	826,397	776,191	35,693	946,298
Greece . . . . .	—	—	62	86	—	481	—	996	—	1,197
Italy . . . . .	31	35	196	117	769	765	1,887	3,497	827	3,818
Switzerland . . . . .	0	0	44	15	2	4	983	6,929	7	8,151
Czechoslovakia . . . . .	55	0	117	280	79	26	946	2,603	26	2,703
Canada . . . . .	1,764	112	0	9	3,825	3,307	1,371	196	3,505	238
United States . . . . .	128	99	20	44	895	1,378	930	847	1,607	1,014
Ceylon . . . . .	—	—	44	35	—	496	496	478	—	602
Java and Madura . . . . .	—	—	—	—	—	—	1) 7,668	1) 6,579	—	8,792
Japan . . . . .	—	—	4	2	—	214	—	115	—	163
Algeria . . . . .	0	2	620	646	15	31	3,655	3,223	35	3,955
Egypt . . . . .	7	7	35	90	240	359	578	672	384	814
Tunis . . . . .	0	0	44	101	4	2	1,274	963	4	1,305
Totals . . . . .	99,256	105,272	83,047	83,333	946,081	965,707	995,602	1,003,450	1,244,300	1,222,210

<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	445	597	0	0	1,973	1,647	0	2	2,601	4
Denmark . . . . .	1,396	1,530	7	7	18,678	11,797	60	108	14,535	130
Finland . . . . .	1,003	798	2	2	7,445	6,404	22	15	7,225	26
Italy . . . . .	5,110	7,679	1,093	994	42,221	55,052	8,552	7,394	66,399	8,772
Lithuania . . . . .	75	187	0	1	1,354	1,484	2	4	1,768	7
Norway . . . . .	357	417	15	11	3,289	3,049	139	179	3,644	240
Netherlands . . . . .	12,189	17,205	75	112	119,872	146,758	642	880	170,061	1,076
Poland . . . . .	119	75	29	73	384	712	355	483	767	586
Switzerland . . . . .	4,021	4,431	322	357	38,147	36,784	2,820	4,012	43,658	4,755
Czechoslovakia . . . . .	461	624	174	384	2,352	5,232	2,430	2,670	6,124	3,071
Yugoslavia . . . . .	459	408	7	11	2,604	2,022	55	130	2,617	150
Canada . . . . .	14,939	14,775	134	159	53,414	70,431	778	869	86,940	1,166
Australia . . . . .	899	849	7	15	7,734	5,236	49	29	8,801	60
New Zealand . . . . .	14,061	9,555	—	—	174,876	147,754	3) 4	3) 2	200,491	2
<i>Importing Countries:</i>										
Germany . . . . .	284	322	8,395	12,637	3,289	3,217	77,759	93,851	4,237	108,688
Austria . . . . .	644	631	93	249	3,869	3,144	1,856	3,197	3,982	3,724
Belgium . . . . .	31	51	4,641	4,943	293	478	41,072	40,052	551	45,660
Spain . . . . .	9	11	258	194	633	209	1,806	1,854	238	2,480
Irish Free State . . . . .	24	2	4	183	35	31	331	1,887	37	2,019
France . . . . .	2,086	2,637	2,981	4,747	20,397	23,353	39,608	42,044	29,211	52,146
Gr. Brit. and N. Irel. . . . .	439	750	27,736	22,269	5,152	6,072	282,680	277,512	7,242	336,733
Greece . . . . .	187	159	11	95	919	379	699	1,378	620	1,753
Hungary . . . . .	4	2	0	0	46	31	11	11	33	11
Portugal . . . . .	—	—	—	—	—	—	1) 293	1) 353	—	608
Sweden . . . . .	—	—	132	101	—	—	767	785	—	1,045
United States . . . . .	117	106	3,829	6,301	1,199	1,213	38,885	44,179	1,490	55,629
India . . . . .	0	0	128	83	—	2	866	739	2	950
Java and Madura . . . . .	—	—	—	—	—	—	1) 1,307	1) 1,208	—	1,642
Syria and Lebanon . . . . .	2	0	99	198	26	46	1,127	902	68	1,195
Algeria . . . . .	11	15	937	995	106	126	8,752	8,968	159	11,100
Egypt . . . . .	9	18	739	831	101	203	4,766	4,120	254	5,260
Tunis . . . . .	0	0	225	280	60	9	2,180	1,726	13	2,191
Totals . . . . .	59,385	63,834	52,073	56,196	510,470	532,875	520,494	541,543	663,768	652,885

1) 3) 4) See notes page 892.

COUNTRIES	OCTOBER				THREE MONTHS (August 1-October 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33

**Cotton. — Thousand centals (1 cental = 100 lb.).**

<i>Exporting Countries:</i>										
United States . . .	5,576	5,448	60	20	13,168	11,923	148	90	45,676	653
Argentina . . .	22	37	—	—	159	238	—	—	556	—
Brazil . . .	—	—	—	—	4	2	—	—	22	—
India . . .	340	483	60	26	1,307	1,468	220	119	10,617	924
Egypt . . .	822	467	0	0	1,614	1,124	0	0	6,285	0
<i>Importing Countries:</i>										
Germany . . .	126	126	820	915	370	406	2,388	1,821	1,259	9,467
Austria . . .	0	0	66	42	0	0	168	101	0	452
Belgium . . .	46	22	159	174	137	62	481	373	298	1,894
Denmark . . .	—	—	13	9	—	—	44	26	—	145
Spain . . .	2	2	154	185	7	4	485	485	15	2,211
Estonia . . .	0	0	9	2	0	0	22	15	0	60
Finland . . .	0	0	20	15	0	0	53	37	0	174
France . . .	29	33	653	714	106	88	1,797	1,475	373	7,211
Gr. Brit. and N. Irel.	71	26	1,087	776	150	104	3,245	2,456	514	12,798
Greece . . .	0	0	15	4	0	0	35	29	0	174
Hungary . . .	0	0	40	35	0	0	119	79	0	410
Italy . . .	0	0	333	260	0	0	1,105	763	0	4,178
Latvia . . .	0	0	4	4	0	0	18	15	0	88
Norway . . .	0	0	7	4	0	0	11	13	0	55
Netherlands . . .	2	0	73	55	7	2	192	134	7	763
Poland . . .	0	2	132	106	2	7	395	335	15	1,228
Portugal . . .	—	—	—	—	—	—	73	66	—	437
Sweden . . .	—	—	53	26	—	—	123	95	—	527
Switzerland . . .	0	0	44	49	0	0	115	110	2	571
Czechoslovakia . . .	7	11	139	179	26	33	390	441	106	1,768
Yugoslavia . . .	0	0	20	0	0	0	53	42	0	194
Canada . . .	—	—	123	75	—	—	304	183	—	988
China . . .	—	—	—	—	—	—	421	734	—	2,806
Japan . . .	11	55	961	926	79	90	3,042	2,352	401	9,806
Algeria . . .	0	0	0	0	—	—	2	2	7	7
Totals . . .	7,054	6,712	5,045	4,601	17,136	15,551	15,449	12,391	66,153	59,967

**Wool. — (Thousand lb.).**

COUNTRIES	OCTOBER				THREE MONTHS (August 1-October 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932-33	1932-33

**Wool. — (Thousand lb.).**

<i>Exporting Countries:</i>										
Irish Free State . . .	2,077	1,662	77	49	4,381	2,848	123	196	15,545	842
Hungary . . .	121	198	209	143	461	551	432	179	3,684	1,607
Argentina . . . (a)	6,726	14,260	—	—	13,797	28,629	—	—	327,996	—
Chile . . . (b)	1,171	963	—	—	1,944	2,183	—	—	16,413	—
India . . .	6,828	3,982	198	600	306	93	—	—	21,841	—
Syria and Lebanon . . .	324	536	0	448	10,626	7,006	366	1,135	50,559	7,452
Algeria . . .	507	580	179	150	906	1,105	181	800	4,579	1,512
Egypt . . .	503	353	7	0	1,241	1,133	348	379	10,695	2,041
Un. of S. Africa . . . (a)	24,134	26,273	—	—	608	789	7	0	3,907	84
Australia . . . (b)	452	441	—	—	31,725	38,938	0	0	260,257	0
New Zealand . . . (a)	102,246	93,783	132	57	983	968	93	29	6,429	853
Greece . . . (b)	5,236	5,340	20	0	176,602	160,263	805	71	860,134	4,253
Totals . . .	3,344	2,269	—	—	12,361	12,855	20	0	76,842	42
<i>Importing Countries:</i>										
Germany . . . (a)	435	357	8,422	8,007	7,388	3,353	—	—	221,642	3)
Austria . . . (b)	999	950	5,066	3,223	2,176	9,952	—	—	65,299	3)
Belgium . . . (a)	18	7	963	1,590	—	—	—	—	—	—
Denmark . . . (b)	10,584	4,306	12,707	9,945	—	—	—	—	—	—
Spain . . .	2,205	1,684	558	401	584	871	19,809	18,186	3,763	314,369
Finland . . .	24	51	860	452	2,011	1,552	9,145	5,181	8,695	40,190
France . . .	359	187	401	1,980	22	15	2,478	2,222	245	17,756
Gr. Brit. and N. Irel.	4,160	2,582	20,759	26,325	18,473	7,855	22,190	14,813	96,336	200,544
Greece . . . (a)	36,017	32,679	45,219	38,535	4,564	3,651	1,078	772	22,902	4,244
Italy . . . (b)	121	22	5,421	3,975	35	57	1,325	1,089	273	5,280
Norway . . . (a)	198	452	1,396	661	778	359	1,499	3,497	2,571	11,435
Netherlands . . . (b)	75	77	220	243	4	15	1,016	730	79	4,072
Poland . . .	346	317	386	516	8,455	5,236	39,507	40,878	42,889	564,932
Sweden . . .	159	123	955	838	52,095	44,463	71,018	72,285	425,553	964,495
Switzerland . . .	126	101	1,989	2,714	157	62	13,129	11,238	705	174,523
Czechoslovakia . . .	—	—	1,316	1,290	267	163	448	492	1,100	2,269
Yugoslavia . . .	18	20	1,321	1,788	644	580	853	827	3,280	8,640
Canada . . .	126	123	1,978	1,896	247	220	1,892	1,753	1,243	8,662
United States . . .	77	20	589	137	353	207	4,065	4,422	1,424	38,649
Japan . . .	1,629	692	1,151	556	—	—	2,793	2,352	—	17,948
Tunis . . .	29	82	19,632	4,469	31	51	2,595	2,956	317	20,765
Totals . . .	22	2	13,276	7,277	432	172	3,847	5,448	1,473	32,909
	64	0	62	88	95	44	926	437	161	4,023
	213,316	201,389	146,467	119,542	4,687	1,239	2,690	902	6,775	10,730
	—	—	—	—	75	236	40,940	6,023	459	122,591
	—	—	—	—	37	15	15,812	7,963	88	221,678
	—	—	—	—	104	7	117	134	388	628
	—	—	—	—	360,439	338,750	265,614	210,402	2,572,220	2,828,524

a) = Wool, greasy; b) = Wool, scoured. — x) 3) See notes page 892.

COUNTRIES	OCTOBER		FOUR MONTHS (July 1-Oct. 31)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	OCTOBER		FOUR MONTHS (July 1-Oct. 31)		TWELVE MONTHS (July 1- June 30)
	1933	1932	1933	1932	1932-33		1933	1932	1933	1932	1932-33
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	x) 559,403	x) 252,121	1,614,186	Ceylon . . . . .	13,232	20,627	x) 58,171	x) 78,333	241,791
India . . . . .	1,204	2,202	2,101	2,760	18,600	China . . . . .	...	...	x) 36,264	x) 23,067	84,962
Java and Madura . . . . .	...	...	x) 18,065	x) 45,030	79,858	India . . . . .	43,323	49,708	...	149,002	186,135
						Java and Madura . . . . .	...	...	x) 21,268	x) 30,949	157,807
						Japan . . . . .	2,361	2,903	14,222	14,612	29,736
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	13	90	62	564	1,310	Belgium . . . . .	0	0	0	4	9
Belgium . . . . .	11	57	55	238	410	Irish Free State . . . . .	2	0	9	7	31
France . . . . .	2	0	53	4	128	France . . . . .	4	2	11	4	15
Netherlands . . . . .	1,345	1,563	4,173	5,635	16,261	Gr. Brit. and N. Irel. . . . .	9,852	5,102	32,776	28,166	82,228
Portugal . . . . .	...	...	x) 783	x) 520	2,191	Netherlands . . . . .	13	11	53	37	128
Switzerland . . . . .	37	57	154	141	320	United States . . . . .	51	29	128	101	298
Canada . . . . .	4	7	18	18	51	Syria and Lebanon . . . . .	0	0	0	0	2
United States . . . . .	1,504	915	7,509	3,951	13,100	Algeria . . . . .	7	4	15	11	35
Ceylon . . . . .	0	0	2	0	7	Union of S. Africa . . . . .	...	...	x) 7	x) 4	20
Syria and Lebanon . . . . .	0	0	0	7	11	Australia . . . . .	106	77	408	234	791
Australia . . . . .	2	4	11	11	46	New Zealand . . . . .	...	...	s) 9	s) 7	104
<b>Totals . . . . .</b>	—	—	—	—	1,746,479	<b>Totals . . . . .</b>	68,951	78,463	312,343	361,671	965,290
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	25,014	26,526	103,049	88,983	279,327	Germany . . . . .	957	1,221	3,391	3,459	10,102
Austria . . . . .	1,299	668	3,869	6,012	13,098	Austria . . . . .	84	40	201	348	871
Belgium . . . . .	7,899	11,524	35,400	40,492	96,356	Belgium . . . . .	42	66	154	190	597
Bulgaria . . . . .	64	46	260	123	919	Denmark . . . . .	134	99	384	346	1,265
Denmark . . . . .	4,074	4,372	18,023	11,640	49,022	Spain . . . . .	18	20	88	90	289
Spain . . . . .	3,790	4,094	16,301	13,988	43,385	Estonia . . . . .	15	11	33	22	71
Estonia . . . . .	7	2	73	24	101	Irish Free State . . . . .	2,231	2,242	8,012	7,238	22,836
Irish Free State . . . . .	26	40	108	108	584	Finland . . . . .	20	20	84	64	223
Finland . . . . .	2,674	2,901	12,282	11,142	33,819	France . . . . .	540	216	1,803	884	3,199
France . . . . .	38,912	32,913	134,778	127,602	424,502	Gr. Britain and N. Ireland . . . . .	52,662	65,066	168,169	215,430	572,897
Gr. Britain and N. Ireland . . . . .	3,093	3,023	11,051	12,860	35,404	Greece . . . . .	31	26	134	146	353
Greece . . . . .	939	686	4,330	2,983	7,976	Hungary . . . . .	62	71	132	214	547
Hungary . . . . .	355	450	1,334	2,026	5,818	Italy . . . . .	26	22	64	57	265
Italy . . . . .	6,894	6,898	27,789	27,869	84,578	Latvia . . . . .	7	20	15	49	117
Latvia . . . . .	31	20	60	68	324	Lithuania . . . . .	7	11	24	37	121
Lithuania . . . . .	49	29	128	115	373	Norway . . . . .	26	40	119	137	381
Norway . . . . .	2,694	2,493	11,565	11,169	35,924	Netherlands . . . . .	2,273	8,655	9,647	15,968	30,069
Netherlands . . . . .	8,386	8,433	51,297	32,573	97,738	Poland . . . . .	481	370	1,486	1,173	3,922
Poland . . . . .	1,962	1,310	6,111	4,738	15,296	Portugal . . . . .	...	...	x) 112	x) 68	423
Portugal . . . . .	...	...	x) 2,736	x) 1,942	10,986	Sweden . . . . .	82	88	289	267	875
Sweden . . . . .	7,877	7,992	27,840	31,048	99,449	Switzerland . . . . .	161	176	542	580	2,097
Switzerland . . . . .	2,090	2,575	9,524	10,007	37,168	Czechoslovakia . . . . .	84	163	267	423	1,321
Czechoslovakia . . . . .	2,326	2,359	8,184	8,448	25,441	Yugoslavia . . . . .	64	51	152	168	419
Yugoslavia . . . . .	1,318	1,023	4,987	4,749	14,207	Canada . . . . .	2,881	3,964	10,075	9,350	38,480
Canada . . . . .	2,743	1,953	9,736	7,280	30,003	United States . . . . .	10,928	9,354	40,909	33,041	94,810
United States . . . . .	134,549	121,901	507,689	393,235	1,458,438	Chile . . . . .	...	...	x) 370	x) 990	3,834
Chile . . . . .	...	...	x) 717	x) 1,889	3,979	Syria and Lebanon . . . . .	31	20	104	40	198
Ceylon . . . . .	143	256	1,777	833	2,513	Turkey . . . . .	...	...	x) 196	x) 911	2,339
Japan . . . . .	527	461	1,843	1,195	4,332	Algeria . . . . .	445	326	1,378	1,325	4,129
Syria and Lebanon . . . . .	55	278	820	705	2,218	Egypt . . . . .	1,080	1,717	5,329	6,912	16,290
Turkey . . . . .	...	...	x) 2,939	x) 4,486	10,677	Tunis . . . . .	139	183	600	919	2,654
Algeria . . . . .	1,702	2,216	9,116	9,658	30,189	Union of S. Africa . . . . .	...	...	x) 3,351	x) 3,034	11,605
Egypt . . . . .	1,457	972	7,152	5,496	16,193	Australia . . . . .	3,558	4,855	17,804	18,047	48,434
Tunis . . . . .	227	229	1,085	999	3,501	New Zealand . . . . .	...	...	s) 677	s) 1,052	13,775
Un. of S. Africa . . . . .	...	...	x) 8,067	x) 7,551	27,276						
Australia . . . . .	379	168	1,400	780	3,578						
New Zealand . . . . .	...	...	s) 82	s) 49	362						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
China . . . . .	...	...	x) 223	x) 831	1,653	China . . . . .	...	...	x) 287	x) 2,196	5,518
India . . . . .	754	287	2,299	1,195	3,272	India . . . . .	...	...	x) 602	x) 1,195	3,272
Java and Madura . . . . .	...	...	...	...	...	Java and Madura . . . . .	...	...	...	...	...
<b>Totals . . . . .</b>	263,555	248,811	1,043,522	884,979	3,005,536	<b>Totals . . . . .</b>	79,823	100,405	279,219	327,201	900,251

COUNTRIES	OCTOBER		TWELVE MONTHS (Oct. 1-Sept. 30)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	OCTOBER		THREE MONTHS (August 1-Oct. 31)		TWELVE MONTHS (August 1-July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1933	1932	1932-33
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>EXPORTS.</b>						<b>(Thousand cents).</b>					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Grenada . . . . .	...	...	9,054	9,656	—	Germany . . . . .	692	961	1,565	1,107	6)
Dominican Republ. . . . .	...	...	43,680	35,977	—	Bulgaria . . . . .	260	214	5,302	1,367	1,881
Brazil . . . . .	...	...	211,323	216,389	—	Spain . . . . .	7	0	11	2	11
Ecuador . . . . .	...	...	22,496	35,689	—	Estonia . . . . .	7	0	0	0	0
Trinidad . . . . .	...	...	2)	48,927 2)	36,899	Hungary . . . . .	2,183	498	5,878	1,775	4,405
Venezuela . . . . .	...	...	5)	16,976 5)	10,748	Lithuania . . . . .	2	2	11	7	37
Ceylon . . . . .	236	582	8,250	9,266	—	Poland . . . . .	6)	6)	6)	6)	683
Java and Madura . . . . .	...	...	2,864	3,300	—	Rumania . . . . .	...	...	1)	9)	31
Cameroon . . . . .	...	...	37,424	27,315	—	U. S. S. R. . . . .	...	...	8)	9)	2,008 8)
Ivory Coast . . . . .	1,076	864	69,657	54,578	—	Yugoslavia . . . . .	106	51	225	265	580
Gold Coast . . . . .	19,216	37,836	561,122	462,878	—	Canada . . . . .	15,316	25,483	34,972	54,441	156,745
Nigeria . . . . .	...	...	153,363	123,929	—	United States . . . . .	161	2,344	765	7,447	17,077
St. Thomas and Prince Is. . . . .	...	...	4)	11,039 4)	13,360	Argentina . . . . .	3,457	1,995	17,615	6,422	78,487
Togoland . . . . .	...	...	16,312	13,916	—	Chile . . . . .	...	...	...	...	9)
<i>Importing Countries:</i>						India . . . . .	31	46	101	179	6)
Germany . . . . .	0	0	123	496	—	Japan . . . . .	6)	6)	35	6)	6)
Belgium . . . . .	0	93	474	1,508	—	Syria and Lebanon . . . . .	55	6)	6)	6)	6)
France . . . . .	0	60	66	4	—	Turkey . . . . .	...	...	1)	134)	9
Netherlands . . . . .	503	379	3,962	6,740	—	Algeria . . . . .	602	214	2,103	2,258	5,022
United States . . . . .	791	745	9,416	7,011	—	French Morocco . . . . .	...	...	2)	448 a)	2
Australia . . . . .	0	0	403	143	—	Tunis . . . . .	6)	463	159	1,160	3,201
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>1,226,931</b>	<b>1,069,802</b>	<b>—</b>	Australia . . . . .	2,776	4,769	11,848	11,272	88,935
<b>IMPORTS.</b>						<b>Totals . . . . .</b>	<b>25,655</b>	<b>37,040</b>	<b>86,062</b>	<b>90,261</b>	<b>370,224</b>
<i>Importing Countries:</i>						<i>b) NET IMPORTS.</i>					
Germany . . . . .	12,538	14,392	172,098	175,744	—	Germany . . . . .	7)	7)	7)	7)	3,012
Austria . . . . .	937	525	7,564	13,651	—	Austria . . . . .	472	556	1,213	1,418	7,948
Belgium . . . . .	1,129	1,144	15,296	21,588	—	Belgium . . . . .	2,044	2,619	5,904	5,941	23,559
Bulgaria . . . . .	11	29	608	1,323	—	Denmark . . . . .	655	719	2,474	2,456	7,220
Denmark . . . . .	346	190	8,234	7,756	—	Irish Free State . . . . .	1,338	776	3,602	2,787	10,726
Spain . . . . .	558	370	22,906	19,921	—	Finland . . . . .	225	227	705	686	2,573
Estonia . . . . .	88	9	410	452	—	France . . . . .	1,093	1,376	2,469	9,998	19,679
Irish Free State . . . . .	26	108	3,071	1,149	—	Gr. Brit. and N. Irel. . . . .	12,421	12,068	35,263	32,285	129,134
Finland . . . . .	9	7	187	181	—	Greece . . . . .	639	1,038	2,288	2,989	11,819
France . . . . .	12,194	7,851	98,300	91,201	—	Italy . . . . .	231	293	540	284	6,654
Gr. Brit. and N. Irel. . . . .	13,230	9,769	148,744	138,407	—	Latvia . . . . .	0	2	0	15	15
Greece . . . . .	346	179	2,216	2,844	—	Norway . . . . .	608	414	1,360	1,063	5,060
Hungary . . . . .	454	231	6,294	5,573	—	Netherlands . . . . .	2,053	1,828	6,232	4,257	16,319
Italy . . . . .	1,927	974	17,104	15,053	—	Poland . . . . .	73	13	53	9	7)
Latvia . . . . .	126	18	1,219	1,607	—	Portugal . . . . .	...	...	...	...	796
Lithuania . . . . .	60	31	686	615	—	Sweden . . . . .	110	247	342	1,021	1,938
Norway . . . . .	271	71	3,704	5,033	—	Switzerland . . . . .	8)	1,102 8)	1,093 8)	3,371 8)	11,457
Netherlands . . . . .	6,927	5,706	102,081	92,202	—	Czechoslovakia . . . . .	2	24	88	549	7,165
Poland . . . . .	1,479	1,027	15,432	11,444	—	<b>Total Europe . . . . .</b>	<b>23,046</b>	<b>23,293</b>	<b>65,959</b>	<b>69,151</b>	<b>265,074</b>
Portugal . . . . .	...	...	1,116	855	—	Chile . . . . .	...	...	...	...	1,477
Sweden . . . . .	569	362	8,962	10,922	—	Ceylon . . . . .	42	51	121	130	518
Switzerland . . . . .	388	384	16,771	11,197	—	China . . . . .	...	...	1)	1,393 1)	5,552
Czechoslovakia . . . . .	1,847	1,625	18,144	21,526	—	India . . . . .	7)	7)	7)	7)	564
Yugoslavia . . . . .	66	24	1,332	1,501	—	Indo-China . . . . .	42	51	112	123	456
Canada . . . . .	1,290	1,259	20,122	16,444	—	Japan . . . . .	66	1,312	7)	278	3,563
United States . . . . .	25,415	44,000	535,613	420,295	—	Java and Madura . . . . .	...	...	1)	273 1)	201
Japan . . . . .	201	293	2,114	1,960	—	Syria and Lebanon . . . . .	7)	110	22	42	913
Australia . . . . .	123	123	10,454	11,252	—	Egypt . . . . .	7	15	33	132	267
New Zealand . . . . .	...	...	3)	2,167 3)	1,362	Tunis . . . . .	121	7)	7)	7)	7)
<b>Totals . . . . .</b>	<b>82,555</b>	<b>90,701</b>	<b>1,237,949</b>	<b>1,103,058</b>	<b>—</b>	Union of S. Africa . . . . .	...	...	1)	7)	168
						New Zealand . . . . .	...	...	...	...	653
						<b>Totals . . . . .</b>	<b>23,324</b>	<b>24,832</b>	<b>68,295</b>	<b>71,706</b>	<b>307,884</b>

\*) Flour reduced to grain on the basis of the coefficient: 1,000 cents of flour = 1,333.33 cents of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 30 September. — 2) Data up to 31 August. — 3) Data up to 31 July. — 4) Data up to 30 April. — 5) Data up to 31 March. — 6) See Net Imports. — 7) See Net Exports. — 8) Wheat only. — 9) Three Months: July 1-September 30. — 10) Data up to 30 June



## STOCKS

COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	Dec. 1933	Nov. 1933	Oct. 1933	Dec. 1932	Dec. 1931	Dec. 1933	Nov. 1933	Oct. 1933	Dec. 1932	Dec. 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	145,821	149,405	136,509	142,316	101,453	243,035	249,008	227,515	237,194	169,088
U.S. in Canada . . . . .	1,351	1,634	1,868	4,200	17,648	2,251	2,724	3,114	7,000	29,414
U.S. in the United States . .	85,312	91,957	93,991	105,869	142,259	142,187	153,262	156,652	176,448	237,099
Canad. in the United States .	8,860	5,179	3,451	9,118	14,087	14,767	8,631	5,752	15,196	23,479
Total . . . . .	241,344	248,175	235,819	261,503	275,447	402,240	413,625	393,033	435,838	459,080
<b>RYE:</b>										
Canadian in Canada . . . .	2,331	2,821	2,763	2,671	6,833	4,163	5,037	4,934	4,770	12,202
U.S. in Canada . . . . .	0	0	0	55	438	0	0	0	99	782
U.S. in the United States . .	7,926	7,368	7,262	4,496	5,339	14,153	13,158	12,968	8,029	10,427
Canad. in the United States .	58	324	146	231	787	103	578	260	412	1,405
Total . . . . .	10,315	10,513	10,171	7,453	13,897	18,419	18,773	18,162	13,310	24,816
<b>BARLEY:</b>										
Canadian in Canada . . . .	5,697	5,766	5,126	2,892	4,624	11,868	12,013	10,679	6,024	9,633
U.S. in Canada . . . . .	0	0	0	10	12	0	0	0	21	24
U.S. in the United States . .	9,580	9,911	9,278	4,734	3,419	19,958	20,647	19,330	9,862	7,123
Canad. in the United States .	0	0	0	0	312	0	0	0	0	649
Total . . . . .	15,277	15,677	14,404	7,636	8,367	31,826	32,660	30,009	15,907	17,429
<b>OATS: (1)</b>										
Canadian in Canada . . . .	6,865	6,475	5,415	3,099	4,616	21,454	20,234	16,921	9,685	14,426
U.S. in Canada . . . . .	385	316	330	374	159	1,204	987	1,030	1,170	496
U.S. in the United States . .	15,602	15,958	16,271	8,795	5,812	48,755	49,870	50,846	27,484	18,164
Canad. in the United States .	0	0	0	0	10	0	0	0	0	32
Total . . . . .	22,852	22,749	22,016	12,268	10,597	71,413	71,091	68,797	38,339	33,118
<b>MAIZE:</b>										
U.S. in Canada . . . . .	6,065	5,728	4,316	2,358	570	10,830	10,228	7,707	4,211	1,017
Of other origin in Canada . .	1,137	736	267	942	1,280	2,030	1,314	477	1,682	2,286
U.S. in the United States . .	36,430	34,359	33,483	15,193	5,487	65,053	61,355	59,791	27,130	9,798
Total . . . . .	43,632	40,823	38,066	18,493	7,337	77,913	72,897	67,975	33,023	13,101

1) For oats the bushel is of 32 lb.

QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	Dec. 1933	Nov. 1933	Oct. 1933	Dec. 1932	Dec. 1931	Dec. 1933	Nov. 1933	Oct. 1933	Dec. 1932	Dec. 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of grain) . . . . .	16,397	17,218	20,722	23,765	21,432	27,328	28,696	34,536	39,608	35,720
Rye . . . . .	1,061	413	120	348	2,443	1,894	737	214	686	4,363
Barley . . . . .	2,796	4,036	2,812	1,632	3,652	5,825	8,408	5,858	3,400	7,608
Oats . . . . .	733	1,066	291	1,264	1,222	2,290	3,330	910	3,950	3,820
Maize . . . . .	12,168	9,610	14,122	16,234	25,162	21,729	17,160	25,217	28,989	44,931

Authority: Broomhall's Corn Trade News.

## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks: total production				% Quantities intended for sale: total production				% Stocks in elevators: total production 1)	
	15 Nov. 1933	15 Oct. 1933	15 Nov. 1932	15 Nov. 1931	15 Nov. 1933	15 Oct. 1933	15 Nov. 1932	15 Nov. 1931	15 Nov. 1933	15 Nov. 1932
Winter wheat . . .	...	68.9	59.5	47.4	...	58.4	49.5	38.3	...	6.2
Spring wheat . . .	...	87.6	77.3	74.0	...	73.8	65.3	61.7	...	5.9
Winter rye . . .	...	68.3	59.5	50.5	...	39.0	33.6	22.3	...	3.4
Winter barley . . .	...	50.1	34.4	34.6	...	11.1	5.7	6.2	...	0.8
Spring barley . . .	...	74.5	62.2	66.2	...	48.3	36.8	42.0	...	0.4
Oats . . .	...	87.8	78.9	78.4	...	17.6	19.2	18.7	...	0.2
Early potatoes . . .	...	27.2	66.8	65.4	...	10.7	...	...	...	...
Late potatoes . . .	...	81.3	...	...	...	25.9	21.4	19.9	...	0.0

1) These stocks are the property of farmers but are not on the farms; as they are partly in commercial elevators certain quantities are reckoned twice, the report on stocks in elevators not making any distinction of ownership.

Authority: Preisberichtsstelle beim Deutschen Landwirtschaftsrat.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	Nov. 1933	Oct. 1933	Sept. 1932	Nov. 1932	Nov. 1933	Oct. 1933	Sept. 1933	Nov. 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	23,601	21,852	19,828	14,398	39,333	36,420	33,047	23,997
Flour for bread . . . .	3,018	3,009	2,670	2,701	1,540	1,535	1,362	1,378
TOTAL 2) . . . .	27,624	25,864	23,388	17,998	46,041	43,106	38,979	29,999
RYE:								
Grain . . . . .	17,710	17,835	17,732	11,429	31,625	31,849	31,664	29,409
Flour for bread . . . .	1,784	1,799	1,572	1,631	910	918	802	832
TOTAL 2) . . . .	20,089	20,234	19,829	13,605	35,872	36,133	35,407	24,292
BARLEY . . . . .	5,179	4,749	4,105	4,059	10,789	9,893	8,552	8,456
OATS . . . . .	1,781	1,678	1,437	1,918	5,567	5,243	4,492	5,994

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye)

## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First day of the month					First day of the month				
	Dec. 1933	Nov. 1933	Oct. 1933	Dec. 1932	Dec. 1931	Dec. 1933	Nov. 1933	Oct. 1933	Dec. 1932	Dec. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	9,288	9,048	7,200	4,080	16,608	15,480	15,080	12,000	6,800	27,680
Flour as grain . . . .	1,056	1,008	720	480	1,104	1,760	1,680	1,200	800	1,840
TOTAL . . . . .	10,344	10,056	7,920	4,560	17,712	17,240	16,760	13,200	7,600	29,520
Barley . . . . .	1,600	1,340	900	680	1,100	3,333	2,762	1,875	1,417	2,292
Oats . . . . .	480	352	400	304	432	1,500	1,100	1,250	950	1,350
Malt . . . . .	2,160	2,760	3,528	2,544	3,840	3,857	4,929	6,300	4,543	6,857

1) Imported cereals.

Authority: Broomhall's Corn Trade News.

## STOCKS OF COTTON ON HAND IN THE UNITED STATES.

LOCATION	Last day of the month					Last day of the month				
	Nov 1933	Oct 1933	Sept. 1933	Nov. 1932	Nov 1931	Nov 1933	Oct. 1933	Sept 1933	Nov 1932	Nov 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . .	7,737	6,690	5,706	7,162	7,032	134	1,361	1,161	1,457	1,441
In public storage and at compresses . .	51,224	46,609	36,281	52,526	52,620	10,412	9,474	7,375	10,677	10,696
TOTAL . . .	58,961	53,299	41,987	59,688	59,702	11,986	10,835	8,536	12,134	12,137

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	Dec 1933	Nov 1933	Oct. 1933	Dec. 1932	Dec. 1931	Dec 1933	Nov 1933	Oct 1933	Dec 1932	Dec 1931
	1,000 centals					1,000 bales (1 bale = 47½ lb)				
Bombay 1) . . .	2,214	2,256	2,559	2,091	1,542	463	472	535	437	204
Alexandria . . .	3,006	2,633	1,788	4,137	5,522	641	551	374	865	1,155

1) Stocks held by exporters, dealers and mills.

Authorities: East Indian Cotton Ass. and Commission de la Bourse de Minei-el-Bassol.

## STOCKS OF COTTON IN EUROPE 1).

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	Dec 1933	Nov 1933	Oct 1933	Dec 1933	Dec 1932	Dec 1933	Nov 1933	Oct 1933	Dec 1932	Dec 1931
	1,000 centals					1,000 bales (1 bale = 47½ lb)				
<i>Great Britain:</i>										
American . . .	2,269	2,095	2,163	2,089	1,459	475	436	452	437	305
Argentine, Brazilian, etc. . .	182	186	184	226	234	35	39	38	47	50
Peruvian, etc . . .	514	463	400	401	331	107	97	84	81	69
East Indian, etc . . .	219	255	300	212	528	46	55	63	44	110
Egyptian, Sudanese . . .	1,078	820	884	1,020	979	225	171	185	214	205
Other 2) . . .	189	194	215	90	190	40	41	45	19	40
TOTAL . . .	4,451	4,013	4,146	4,038	3,726	931	839	867	945	779
<i>Bremen</i>										
American . . .	2,585	2,140	1,967	2,240	1,666	541	448	412	469	286
Other . . .	100	100	121	69	37	21	21	25	14	6
TOTAL . . .	2,685	2,240	2,088	2,308	1,703	562	469	437	483	292
<i>Le Havre:</i>										
American . . .	1,219	919	786	1,104	821	255	192	165	221	171
French colonies . . .	34	28	14	8	24	7	6	3	2	5
Other . . .	46	47	44	31	104	10	10	9	6	22
TOTAL . . .	1,299	994	844	1,143	949	272	208	177	229	198
<i>Total Continental 3)</i>										
American . . .	4,937	3,988	3,361	4,027	2,703	1,033	834	703	842	565
Argentine, Brazilian, etc. . .	61	59	60	37	71	13	12	13	3	15
E Indian, Australian, etc. . .	171	174	177	94	115	36	37	37	20	24
Egyptian . . .	109	129	102	110	125	22	27	21	23	26
W. Indian, W. African, E African, etc. . .	52	44	36	24	30	11	9	5	5	8
TOTAL . . .	5,330	4,394	3,736	4,292	3,030	1,115	919	782	898	638

1) Revised data. — 2) Includes: W. Indian, etc., E. African, etc., W. African, and Australian — 3) Includes Bremen, Le Havre, and other Continental ports.

Authorities: Liverpool Cotton Ass. and (for Le Havre) Bulletin de correspondance de la Bourse du Havre.

# MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise stated, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	15	8	1	24	AVERAGE 1)				
	Dec.	Dec.	Dec.	Nov.	Nov.	Dec.	Dec.	Commercial Season	
	1933	1933	1933	1933	1933	1932	1931	1932-33	1931-32
<b>WHEAT.</b>									
Budapest: Tisza region (78 kg. hl.; pengő p. quintal) . . . . .	7.32	7.57	7.77	7.70	7.63	12.65	13.72	13.73	12.22
Braila: Good quality (lei p. quintal) . . . . .	n. q.	375	370	360	342	599	294	n. 535	305
Winnipeg: No. 1 Manitoba (cents p. 60 lb.) . . . . .	59 7/8	60 3/8	59 1/4	63 1/4	64 1/4	42 1/4	60 1/8	54 1/4	59 3/4
Chicago: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	85	n. 85 1/4	n. 84 1/4	n. 84 1/4	88 1/4	n. 46 1/4	56	59 1/4	54 1/4
Minneapolis: No. 1 Northern (cent p. 60 lb.) . . . . .	82 7/8	82 1/8	84 1/4	85 1/4	87 1/2	46 1/8	71 1/8	60 1/8	66 7/8
New-York: No. 2 Hard Winter (cents p. 60 lb.) . . . . .	95 1/4	94 1/4	94 1/4	96 1/4	98	54 1/4	69	68 1/4	66 1/4
Buenos Aires b): Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.47 1/2	5.50	5.75	5.20	5.46	10) 5.76	6.48	6.09	6.68
Karachi: Karachi white, 2% barley, 1 1/2% dirt (rupees p. 656 lb.) . . . . .	21-14-0	22-6-0	22-12-0	22-2-0	22-14-0	28-13-7	24-2-0	28-4-2	21-15-6
Berlin: Home grown (parity Brandenburg stations; Rm. p. quint.) 2) . . . . .	n. 18.60	n. 18.60	n. 18.60	n. 18.50	n. 18.50	18.92	21.34	19.60	23.63
Hamburg, c.i.f. (Rm. p. quint.): . . . . .									
No. 2 Manitoba . . . . .	7.46	7.69	7.59	7.61	7.58	8.08	10.00	8.83	10.38
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11) 9.75	n. q.	n. 9.32
Barusso (3) . . . . .	5.49	5.70	6.20	6.51	6.70	7.21	8.39	7.76	8.78
Antwerp (francs p. quintal): . . . . .									
Home grown . . . . .	58.00	58.00	59.00	57.00	58.50	77.00	76.25	79.70	83.10
No. 1 Hard Winter, Gulf . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	74.50	85.25	77.70	81.75
Barusso . . . . .	54.00	54.50	55.50	55.50	55.75	66.60	81.60	66.20	74.20
Paris: Home-grown (75-77 kg.; delivery regional depots; frs. p. quintal) 4) . . . . .	n. 123.00	n. 123.00	n. 123.00	n. 122.00	n. 122.00	111.75	163.65	107.35	167.10
London: Home grown (sh. p. 504 lb.) 5) . . . . .	20/-	20/-	20/-	20/-	20/-	23/-	28/5	24/8 1/2	26/5
London and Liverpool, c.i.f., parcels, shipping current month (sh. p. 480 lb.): . . . . .									
German (on sample) . . . . .	16/-	16 1/2	16 4/4	16/6	16/3	n. q.	n. q.	n. 23/8	n. 21/3
Hungarian (on sample) . . . . .	16 9	16 10 1/2	17 1 1/2	17/6	17 6 1/4	n. q.	n. q.	n. q.	n. q.
South Russian (on sample) . . . . .	17 10 1/2	18/3	18/-	18/3	18 0 1/4	n. q.	25/-	n. 26/3	22/3
No. 1 Manitoba . . . . .	24 1 1/4	24/9	25 1 1/4	24 10 1/2	24 10 1/2	24/9	31/5	26/4	28 10
No. 3 Manitoba . . . . .	22/3	22 7 1/2	22/9	23 4 1/2	23 2 1/2	23 7 1/2	28/2	23/3	25/9
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11) 27/7	n. q.	23/3
White Pacific . . . . .	21/-	22 1/2	21/6	21/6	22 3 1/4	n. q.	n. q.	n. q.	26/5
Rosafé (adcat 6) . . . . .	n. 18.6	n. 18 4 1/2	n. 20/-	n. 18 7 1/4	19 2 1/8	22/6	25/8	23/2	23/8
Australian . . . . .	22/3	23 4 1/2	23/-	23/3	23 4 1/4	24/3	28/6	25/7	25/9
Milan (a): Home-grown, soft, "Buono mercantile", (76-78 kg. p. hl.; lire p. quint.) . . . . .	85.00	81.00	78.00	79.00	79.35	110.00	102.85	101.80	106.20
Genoa c.i.f. (U. S. \$ p. quint.): . . . . .									
No. 2 Manitoba . . . . .	2.80	2.76	2.94	2.94	2.94	1.96	2.29	2.23	2.42
No. 2 Canadian Durum . . . . .	2.78	2.82	2.84	2.98	2.96	2.24	3.00	2.41	3.15
Plata 7) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	11) 1.73	1.99	1.83	n. 2.15
<b>RYE</b>									
Budapest: Home-grown (pengő p. quintal) . . . . .	3.90	4.00	4.02	4.00	3.99	6.07	14.42	6.77	12.24
Berlin: Home-grown (parity Brandenburg stations; Rm. p. quint.) 2) . . . . .	15.20	15.20	n. 15.20	15.00	n. 15.00	15.40	19.00	15.52	19.00
Hamburg, c.i.f. (Rm. p. quint.): . . . . .									
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 6.40	n. 9.50
Plata (74-75 kg. p. hl.) 8) . . . . .	4.39	4.56	4.72	5.24	4.85	6.06	8.19	5.98	8.36
Minneapolis: No. 2 (cents p. 56 lb.) . . . . .	57	58	56	61	61 7/8	30 3/4	46 1/4	41 1/4	42 1/8
Groningen (a): Home-grown (fl. p. quint.) . . . . .	7.02	6.92	6.75	6.75	6.61	3.95	4.65	3.92	5.13
<b>BARLEY</b>									
Braila: Average quality (lei p. quintal) . . . . .	141	145	147	147	132	187	278	186	263
Winnipeg: No. 4 Western (cents p. 48 lb.) . . . . .	32 3/4	32 1/2	30 1/4	32 7/8	33 1/4	24 1/4	35 1/8	29 3/4	34 7/8
Chicago: Feeding (cents p. 48 lb.) . . . . .	44	44 1/4	46	56	49 1/4	27	45 1/4	33 1/8	43 1/4
Minneapolis: Feeding, (cents p. 48 lb.) . . . . .	46	44	40	41	39 1/2	22 1/4	43 1/4	27 1/4	38 1/4
Berlin: Home-grown fodder (parity Brandenburg stations; Rm. p. q.) 9) . . . . .	16.70	16.70	16.65	16.65	16.52	16.24	15.05	16.55	16.41
Antwerp: Danubian (francs p. quint.) . . . . .	49.00	50.00	49.00	47.50	46.85	55.50	79.00	55.50	77.25
London: English malting (sh. p. 448 lb.) 5) . . . . .	40/-	40/-	40/-	40/-	41/3	40/-	40/5	35/-	39/4
London and Liverpool, c. i. f., parcels (shillings per 400 lb.): . . . . .									
Danubian 3% . . . . .	12/9	13 1 1/4	13 1/4	13/-	12 7 1/2	18/-	n. q.	n. 16/7	n. q.
Russian (Azoff-Black sea) . . . . .	13/3	13/3	13/3	13/-	12 8 1/2	16/3	21/9	n. 16/5	18 1/11
Canadian Western, N. 3 . . . . .	15/-	15/-	15/9	15/6	15 8 1/2	19 0 1/4	24 10	18/3	20 1/11
Californian malting (sh. p. 448 lb.) . . . . .	22/-	23/-	23/-	n. q.	n. 26/3	23/8	40 1/11	22/8	33/4
Groningen (a): Home grown winter (fl. p. q.) . . . . .	4.05	4.05	3.85	3.85	3.71	4.81	5.78	4.40	5.87

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From 1 Oct. 1933: minimum prices at the farm (fixed according to the law of 26 Sept.) increased with transport costs from farm to station. — 3) August-Nov. 1931-Jan. 1932: 79 kg. p. hl.; Feb.-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From 15 July 1933: minimum prices at the farm (fixed according to the law of 10 July) increased with transport costs from farm to Paris stations. — 5) From August: prices at the farm. — 6) August-Nov. 1931: 63 lb. p. bushel; Dec. 1931: 63 1/2 lb.; Jan.-Dec. 1932: 64 lb.; Jan.-Oct. 1933: 63 1/2 lb.; afterwards: 63 1/2 lb. — 7) Revised series. — 8) From November 1932: 72-73 kg. p. hl. — 9) From 1 Sept. 1933: spring barley, average quality. — 10) New crop. — 11) N. 1 Hard. Winter. — 12) Shipping. March-April. — 13) Shipping Jan. — 14) 17 Nov.: 22/-; 10) Nov.: 22/9; 3 Nov.: 23/-; — 15) New crop: shipping Jan.-Feb. — 16) Price of 5 December.

PRODUCTS, MARKETS AND DESCRIPTION	15 Dec. 1933	8 Dec. 1933	1 Dec. 1933	24 Nov. 1933	AVERAGE 1)				Commercial Season	
					Nov. 1933	Dec. 1932	Dec. 1931	1932-33	1931-32	
OATS.										
Braila: Good quality (1c p. quintal) . . .	160	168	n. q.	140	n. 128	174	328	n. 195	285	
Winnipeg: No. 2 White (cents per 34 lb.)	29 <sup>3</sup> / <sub>4</sub>	30	28 <sup>3</sup> / <sub>4</sub>	29 <sup>3</sup> / <sub>4</sub>	30 <sup>3</sup> / <sub>4</sub>	21 <sup>1</sup> / <sub>2</sub>	29 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	31 <sup>3</sup> / <sub>4</sub>	
Chicago: No. 2 White (cents per 32 lb.)	36	36 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	33 <sup>1</sup> / <sub>2</sub>	35 <sup>1</sup> / <sub>2</sub>	16 <sup>3</sup> / <sub>4</sub>	25 <sup>3</sup> / <sub>4</sub>	21 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	
Buenos Aires a): Current quality (pesos paper p. quintal) . . . . .	3.55	3.85	3.90	3.55	3.63	<sup>9</sup> / <sub>16</sub>	3.87	4.91	4.43	5.33
Berlin: Home grown (parity of Branden- burg stations; Rm. p. quint.) . . . .	14.40	14.60	14.55	14.50	14.42	11.95	13.77	13.05	15.10	
Paris: Home grown, black and other (de- livery regional depots; frs. p. quintal).	47.15	49.00	49.75	48.35	48.55	83.20	94.25	76.30	101.75	
London: Home grown white (sh.p. 336 lb.)	17/-	17/-	17/-	17/-	17/-	18/5	20/6	18/6	21/3	
London and Liverpool c. i. f., parcels (shillings p. 320 lb.):										
German (on sample) . . . . .	n. q.	12/7 <sup>1</sup> / <sub>2</sub>	12/6	12/9	12/9	n. q.	n. q.	n. q.	n. q.	
Danubian (39-40 lb. p. bush.) 3) . . .	10/-	10/-	10/1 <sup>1</sup> / <sub>2</sub>	10/3	10/2 <sup>1</sup> / <sub>2</sub>	n. 13/6	n. q.	n. 14/3	n. q.	
Plata (f. a. q.) . . . . .	11/3	11/-	11/3	11/4 <sup>1</sup> / <sub>2</sub>	11/2 <sup>1</sup> / <sub>2</sub>	<sup>9</sup> / <sub>16</sub>	12/1	16/2	12/9	14/5
Chilian Tawny . . . . .	10/-	10/3	10/1 <sup>1</sup> / <sub>2</sub>	10/3	10/2 <sup>1</sup> / <sub>2</sub>	n. q.	19/1	n. q.	n. 16/-	
Milan (b), (lire p. quintal):										
Home grown . . . . .	51.00	50.00	50.00	48.00	48.50	67.50	75.00	62.80	73.60	
Foreign imported . . . . .	50.00	50.00	49.00	48.00	47.60	61.80	68.00	57.10	65.20	
MAIZE.										
Braila: Danubian (1c p. quintal) . . .	200	200	200	180	195	154	158	162	186	
Chicago: No. 2 Mixed Amer. (cents p. 56 lb.)	48 <sup>1</sup> / <sub>2</sub>	49 <sup>1</sup> / <sub>4</sub>	45 <sup>1</sup> / <sub>4</sub>	44	45 <sup>1</sup> / <sub>2</sub>	24	38 <sup>1</sup> / <sub>4</sub>	37 <sup>1</sup> / <sub>8</sub>	34	
Buenos Aires (a): Yellow Plata (pesos paper p. quintal) . . . . .	4.40	4.40	4.40	3.80	3.82	3.96	4.30	4.00	4.63	
Antwerp, (francs p. quintal):										
Bessarabian . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 49.00	n. q.	
Yellow Plata . . . . .	56.00	55.00	56.00	52.00	48.00	50.00	52.50	49.50	57.20	
Argentine Cinquantino . . . . .	57.60	58.00	60.50	62.00	57.85	64.00	57.25	64.90	63.30	
London and Liverpool, parcels, c. i. f. (shillings p. 480 lb.):										
Danubian . . . . .	<sup>9</sup> / <sub>16</sub> 17/-	18/-	<sup>9</sup> / <sub>16</sub> 17 <sup>1</sup> / <sub>2</sub>	17/6	17/6	17/7	18/7	16/11 <sup>3</sup> / <sub>4</sub>	n. 19/3	
Yellow Russian . . . . .	16/6	16/9	16/9	<sup>7</sup> / <sub>16</sub> 16/9	<sup>7</sup> / <sub>16</sub> 16/6	n. q.	n. q.	n. 16/8	n. q.	
White Russian . . . . .	18/6	19/-	18/4 <sup>1</sup> / <sub>2</sub>	<sup>7</sup> / <sub>16</sub> 18/3	<sup>7</sup> / <sub>16</sub> 18/0 <sup>3</sup> / <sub>4</sub>	n. q.	n. q.	n. 17/6	n. q.	
Yellow Plata . . . . .	17/1 <sup>1</sup> / <sub>2</sub>	17/3	17/-	17/3	16/9	17/6 <sup>1</sup> / <sub>4</sub>	16/9	16/10	18/2	
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	17/11 <sup>1</sup> / <sub>2</sub>	21/1 <sup>1</sup> / <sub>2</sub>	n. 17/11	n. 21/-	
Milan (b) Home grown (lire p. quintal) .	46.00	45.00	45.00	45.00	43.75	59.40	61.75	51.65	68.70	
RICE (MILLED).										
Milan (b), lire p. quintal:										
Vialone, oiled . . . . .	188.00	185.00	185.00	180.00 <sup>4</sup>	175.60	181.50	173.85	181.15	145.90	
Maratelli, oiled . . . . .	141.00	139.00	139.00	131.50	129.10	139.00	139.25	151.25	117.35	
Originario, white . . . . .	96.50	96.50	96.50	87.50	85.75	103.20	115.50	121.40	103.20	
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	175	177 <sup>1</sup> / <sub>2</sub>	202 <sup>1</sup> / <sub>2</sub>	230	206 <sup>1</sup> / <sub>2</sub>	218	260	268 <sup>1</sup> / <sub>2</sub>	249 <sup>1</sup> / <sub>2</sub>	
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white (25 % broken) . .	...	...	...	3.08	<sup>9</sup> / <sub>16</sub> 3.14	4.22	6.12	5.48	6.73	
No. 2 Japan (40 % broken) . . . . .	...	...	...	2.92	<sup>9</sup> / <sub>16</sub> 2.96	4.05	5.60	5.11	6.20	
London (a), c. i. f. (shillings p. 112 lb.):										
No. 3 Spanish Belloch, oiled . . . . .	14/-	14/-	13/6	13/6	13/6	14/2	13/7	13/8	11/11	
No. 6 Italian good, oiled . . . . .	10/10 <sup>1</sup> / <sub>2</sub>	11/-	11/-	8/10 <sup>1</sup> / <sub>2</sub>	9/3 <sup>1</sup> / <sub>2</sub>	14/2	n. q.	14/-	13/7	
American Blue Rose . . . . .	16/9	16/9	16/9	16/3	17/1 <sup>1</sup> / <sub>2</sub>	16/8	22/3	17/1	18/7	
No. 2 Rangoon or Basscin (Burma) . .	<sup>10</sup> / <sub>16</sub> 6/0 <sup>3</sup> / <sub>4</sub>	<sup>10</sup> / <sub>16</sub> 6/0 <sup>3</sup> / <sub>4</sub>	<sup>10</sup> / <sub>16</sub> 6/3 <sup>1</sup> / <sub>4</sub>	<sup>10</sup> / <sub>16</sub> 6/4 <sup>1</sup> / <sub>2</sub>	<sup>10</sup> / <sub>16</sub> 6/5 <sup>1</sup> / <sub>2</sub>	<sup>10</sup> / <sub>16</sub> 7/1	<sup>10</sup> / <sub>16</sub> 8/10	8/4	7/11	
No. 1-Saigon . . . . .	<sup>11</sup> / <sub>16</sub> 5/9	<sup>11</sup> / <sub>16</sub> 5/10 <sup>1</sup> / <sub>2</sub>	<sup>11</sup> / <sub>16</sub> 5/10 <sup>1</sup> / <sub>2</sub>	<sup>11</sup> / <sub>16</sub> 5/7 <sup>1</sup> / <sub>2</sub>	<sup>11</sup> / <sub>16</sub> 5/10	<sup>11</sup> / <sub>16</sub> 7/4	9/9	8/5	8/1	
Siam special 4) . . . . .	<sup>12</sup> / <sub>16</sub> 7/1 <sup>1</sup> / <sub>2</sub>	<sup>12</sup> / <sub>16</sub> 7/3	<sup>12</sup> / <sub>16</sub> 7/-	<sup>12</sup> / <sub>16</sub> 7/1 <sup>1</sup> / <sub>2</sub>	<sup>12</sup> / <sub>16</sub> 7/2 <sup>1</sup> / <sub>2</sub>	<sup>12</sup> / <sub>16</sub> 7/9	n. q.	9/4 <sup>1</sup> / <sub>2</sub>	9/5	
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	21.60	22.00	22.10	22.30	22.53	22.80	18.57	21.20	18.46	
LINSEED.										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	12.00	11.85	12.10	9.90	10.40	9.22	9.87	9.22	10.82	
Antwerp: Plate (francs p. quintal) . . .	115.00	117.00	111.00	107.00	109.00	103.25	109.50	103.25	146.00	
London, c. i. f. (£ p. long ton):										
Plata (delivery Hull) . . . . .	9-12-6	9-10-0	9-7-6	n. 9-11-3	9-14-1	<sup>9</sup> / <sub>16</sub> 8-16-9	9-4-3	8-8-4	8-14-1	
Bombay No. 1 . . . . .	11-7-6	11-3-9	11-7-6	11-6-3	11-8-5	11-10-0	11-11-6	11-10-0	11-9-6	
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.) . .	170 <sup>1</sup> / <sub>4</sub>	168	172 <sup>1</sup> / <sub>4</sub>	<sup>12</sup> / <sub>16</sub> 171	<sup>12</sup> / <sub>16</sub> 174 <sup>1</sup> / <sub>2</sub>	107 <sup>1</sup> / <sub>2</sub>	138	118 <sup>1</sup> / <sub>4</sub>	148	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From August: prices paid at the farm. — 3) From 18 Aug. 1933: 35-36 lb. p. bush.; 5<sup>9</sup>/<sub>16</sub> dirt. — 4) Before January 1932: No. 1 Garden Siam. — 5) New crop. — 6) New crop; kiln dried. — 7) Shipping Dec.-Jan. — 8) 17 Nov.: 3.08; 10 Nov.: 3.16; 3 Nov.: 3.25. — 9) 17 Nov.: 2.83; 10 Nov.: 3.00; 3 Nov.: 3.08. — 10) New crop; shipping Jan.-Febr. — 11) New crop; shipping Febr.-March. — 12) Siam super; new crop; shipping Jan.-Feb. — 13) Dec. future.

PRODUCTS, MARKETS AND DESCRIPTION	15	8	1	24	AVERAGE 1)					Commercial Season	
	Dec.	Dec.	Dec.	Nov.	Nov.	Dec.	Dec.				
	1933	1933	1933	1933	1933	1932	1931			1932-33	1931-32
COTTONSEED.											
Alexandria: Sakellariidis (piastres p. ardeb)	36.4	35.4	36.1	35.6	36.1	70.4	56.7			60.7	60.0
London: Sakellariidis (delivery Hull; 1 p. long tol.)	4-2-6	3-18-9	4-2-6	4-1-3	4-2-10	7-7-0	5-17-9			6-4-5	6-3-6
COTTON.											
New Orleans: Middling (cents p. lb.)	9.93	9.84	9.85	9.90	9.78	5.85	6.16			7.27	6.20
New York: Middling (cents p. lb.)	10.20	10.10	10.20	10.10	10.04	5.95	6.34			7.38	6.35
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 78 1/2 lb.)	181	179	178	179	184	197 1/4	196			201 13/16	181 1/2
Alexandria (talaris p. kantar):											
Sakellariidis f. g. f.	12.90	12.50	12.60	12.60	12.57	12.84	12.60			14.15	12.10
Ashmuni-Zagora f. g. f.	10.25	9.95	10.05	9.70	9.97	11.91	9.89			12.46	9.69
Bremen: Middling (U. S. cents p. lb.)	11.50	11.46	11.33	11.29	11.22	6.99	7.29			8.54	7.44
M. g. Broach fully good (pence p. lb.)	n. 4.40	n. 4.30	n. 4.30	n. 4.30	n. 4.35	n. 4.70	n. 5.20			4.81	4.46
Le Havre: Middling, Gulf (francs p. 50 kg.)	210.00	215.00	208.00	205.00	204.50	217.00	210.00			233.75	216.00
Liverpool (pence per lb.):											
Middling fair	n. 6.35	n. 6.35	n. 6.25	n. 6.19	n. 6.34	n. 6.34	n. 6.30			6.71	5.85
Middling	5.25	5.25	5.15	5.09	5.24	5.19	5.25			5.61	4.79
São Paulo, g. f.	5.55	5.55	5.45	5.39	5.54	n. 5.44	5.37			5.87	4.98
M. g. Broach, f. g.	n. 3.92	n. 4.01	n. 4.02	n. 3.99	n. 4.14	n. 4.77	n. 4.83			5.01	4.34
Sakellariidis, f. g. f.	7.16	7.10	7.14	7.01	7.07	7.06	7.16			7.77	6.76
BUTTER.											
										1932	1931
Copenhagen (a) Danish (Crs. p. quint.)	198.00	192.00	192.00	200.00	201.20	177.60	222.00			178.70	209.00
Leeuwarden, Commission for the Dutch butter quotations (a) (florins p. kg.)	...	60	60	63	64 1/2	73	118			94	134
Zutphen, auction: Dutch (prices for home consumption; fl. p. kg.) 2)	...	162	155	156	1.59	159	119			127	138
Hamburg, auction (b): Schleswig-Holstein butter, with qual. mark (Rm. p. 50 kg.)	129.76	129.75	129.39	129.41	129.33	110.21	115.95			115.83	131.22
Kempton (b): Allgäu butter (Rpf. p. 1/2 kg.) 3)	124	123	123	123	123	107 1/2	97			107	110
London (c) (shillings p. cwt.):											
British blended	116.8	121.4	121.4	126/-	124/1	121/4	135/4			131/6	140/4
Danish	114/-	118/-	120/-	123/-	119/7	126/3	137/2			123/2	133/4
Irish creamery, salted	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 118/-			n. 111/-	119/5
Dutch	n. q.	n. q.	n. q.	n. q.	n. q.	120/-	143/-			n. 115/10	132/1
Argentine	86/-	94/-	98/-	98/-	96/5	93/3	106/10			n. 103/9	117/7
Siberian 4)	73/-	75/-	80/-	82/-	82/9	89/-	n. q.			n. 93/3	n. q.
Australian, salted	79/-	78/-	84/-	90/-	92/-	90/6	109/10			105/7	116/8
New Zealand, salted	80/-	80/-	86/-	94/-	94/5	92/9	111/10			109/10	119/11
CHEESE.											
Milan (lire p. quintal):											
Parmigiano-Reggiano, 1st quality, last year's production	...	850.00	865.00	865.00	865.00	992.00	975.00			1,016.00	1,103.00
Green Gorgonzola, mature, choice	...	410.00	425.00	425.00	425.00	620.00	546.00			512.70	616.00
Rome: Roman pecorino, choice (lire p. q.)	...	775.00	775.00	775.00	781.00	1,270.00	1,175.00			1,251.00	1,121.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.)	...	22.50	23.00	23.00	23.00	25.30	22.12			24.41	32.63
Gouda: Gouda 45+ (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.)	...	26.50	27.00	27.50	27.87	31.10	30.60			26.92	37.93
Kempton (b): (Rpf. p. 1/2 kg.):											
Soft cheese, green (20 % butterfat)	24 1/2	24 1/2	24 1/2	23 1/2	23 3/4	19 1/2	23 3/4			21	24
Emmenthal from the Allgäu (whole milk cheese) 1st quality	71	71	71	71	71	74 1/2	88 1/4			81 1/2	97 1/2
London (c) (shillings p. cwt.):											
English Cheddar	100/-	98/-	98/-	98/-	98/-	106/-	105/2			109/-	99/10
Canadian	55/-	57/-	57/-	56/-	56/7	73/3	72/7			72/10	75/9
New Zealand	51/6	53/-	53/-	54/-	53/1	61/10	67/4			63/1	63/2
Liverpool (d): English Cheshire, ungraded (sh. p. cwt.)	98/-	98/-	98/-	98/-	98/-	91/-	139/6			103/10	94/3

n. q. = not quoted. — n = nominal. — a) Thursday prices. — b) Wednesday prices. — c) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Before January 1933: quotations in Maastricht; see note on page 425 of the Crop Report of June. — 3) The method of quotation was changed in January 1932; in June 1933 another change has occurred; see note on page 425 of the Crop Report of June. — 4) September 1932-January 1933 and July - 6 Sept. 1933: Russian. — 5) April-May future.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

On pages 900 to 902 the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

In addition to the original data summary table are given below.

### *Percentage variations in the index-numbers for November, 1933*

COUNTRIES	compared with those for October, 1933		compared with those for November, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 1.1	+ 0.3	+ 6.7	+ 2.2
England and Wales . . . . .	+ 1.9	— 1.5	+ 7.9	+ 1.8
Argentina . . . . .	+ 3.3	—	+ 1.8	—
Canada . . . . .	+ 4.7	+ 1.2	+ 21.7	+ 6.0
United States . . . . . { a) { b)	... ...	... ...	... ...	... ...
Finland . . . . .	...	...	...	...
Hungary . . . . .	0.0	— 1.5	— 21.7	— 14.6
Italy . . . . .	+ 1.5	— 0.6	— 15.5	— 8.8
New Zealand . . . . .	...	—	...	—
Netherlands . . . . .	— 1.8	+ 1.4	+ 5.9	— 1.3
Poland . . . . .	— 0.5	— 0.2	— 8.5	— 7.2
Yugoslavia . . . . . { c) { d)	+ 7.6 + 1.2	+ 2.6	+ 10.1 — 3.3	— 2.5

a) Bureau of Agricultural Economics — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*)

COUNTRIES AND CLASSIFICATIONS	Nov. 1933	Oct. 1933	Sept. 1933	Aug. 1933	July 1933	June 1933	Nov. 1932	Nov. 1931	Year	
									1932	1931
<b>GERMANY</b>										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	100.0	98.9	97.5	97.0	100.6	100.8	99.1	115.6	112.0	119.3
Livestock . . . . .	70.6	72.3	69.8	66.8	62.3	59.7	63.5	71.4	65.5	83.0
Livestock products . . . . .	113.7	109.5	105.7	102.1	96.2	93.1	103.4	107.4	93.9	108.4
Feeding stuffs . . . . .	92.1	90.8	86.3	84.0	87.3	86.6	84.4	98.7	91.6	101.9
Total agricultural products . . . . .	93.7	92.7	89.9	87.7	86.6	85.1	87.8	98.5	91.3	103.8
Fertilizers 1) . . . . .	70.5	71.1	70.8	70.2	69.1	71.9	69.8	72.1	70.4	76.5
Agricultural dead stock . . . . .	111.3	112.1	112.1	111.9	111.9	111.4	113.6	128.6	116.1	130.7
Finished manufactures ("Konsum- güter") . . . . .	113.8	113.7	113.2	112.8	112.2	110.8	112.5	134.2	117.5	140.1
Wholesale products in general . . . . .	96.0	95.7	94.9	94.2	93.9	92.9	93.9	106.6	96.5	110.9
<b>ENGLAND AND WALES</b>										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	109	107	107	105	101	100	101	112	109	120
Feeding stuffs . . . . .	80	78	80	83	85	85	90	97	95	83
Fertilizers . . . . .	87	87	87	88	91	91	88	90	90	96
Wholesale products in general 2) . . . . .	93.3	94.7	94.9	95.5	96.1	95.6	91.6	97.6	94.9	97.7
<b>ARGENTINA</b>										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	51.0	49.8	55.3	57.6	61.2	55.8	55.5	65.6	59.5	55.8
Meat . . . . .	71.4	70.4	70.4	68.4	66.2	64.1	60.9	91.3	69.8	94.3
Hides and skins . . . . .	61.4	60.6	66.5	73.7	75.7	74.8	54.7	66.3	53.1	64.5
Wool . . . . .	66.0	56.9	58.4	52.5	59.0	58.0	40.7	58.0	44.2	61.2
Dairy products . . . . .	60.4	58.7	61.1	67.0	66.9	55.4	53.7	70.7	56.9	74.5
Forest products . . . . .	71.8	71.3	70.5	74.3	75.7	75.7	64.9	81.7	68.4	99.3
Total agricultural products . . . . .	56.1	54.3	58.5	60.2	63.0	58.8	55.1	69.2	59.1	63.8
<b>CANADA</b>										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	46.7	44.6	49.5	54.9	60.8	49.4	36.6	46.9	40.7	43.6
Animals and animal products . . . . .	65.8	62.8	63.4	60.5	59.0	57.9	56.9	72.3	60.9	77.6
Total Canadian farm products . . . . .	53.8	51.4	54.7	57.0	60.1	52.6	44.2	56.4	48.3	56.3
Fertilizers . . . . .	76.2	78.4	75.8	75.8	73.0	73.0	72.3	72.3	71.8	82.6
Consumers' goods (other than foodstuffs, etc) . . . . .	78.1	77.3	77.4	76.2	75.3	75.0	78.3	79.0	78.8	80.0
Wholesale products in general . . . . .	68.7	67.9	68.9	69.4	70.5	67.6	64.8	70.7	67.0	72.1
<b>ESTONIA</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported . . . . .	...	...	...	...	...	...	112	124	113	129
Commodities exported . . . . .	...	...	...	...	...	51	63	70	58	76
Agricultural products imported and export- ed . . . . .	...	...	...	...	...	...	72	85	74	91

\*) For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930), as well as to pages 77 to 79 of the *Crop Report of January 1932* and to page 517 of the *Crop Report of July 1932*.

1) From July 1932 new series. — 2) Calculated by the Statist, reduced to base-year 1913 = 100.



COUNTRIES AND CLASSIFICATIONS	Nov. 1933	Oct. 1933	Sept. 1933	Aug. 1933	July 1933	June 1933	Nov. 1932	Nov. 1931	Year	
									1932	1931
<b>UNITED STATES</b> (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	...	68	78	81	94	63	34	57	44	63
Fruits and vegetables . . . . .	...	86	101	120	103	74	57	68	71	98
Meat animals . . . . .	...	63	62	63	66	66	57	76	63	93
Dairy products . . . . .	...	78	76	72	71	65	68	95	70	94
Poultry and eggs . . . . .	...	94	77	67	67	55	115	123	80	96
Cotton and cottonseed . . . . .	...	71	69	71	84	69	47	50	46	63
Total agricultural products . . . . .	...	70	70	72	76	64	54	71	57	80
Commodities purchased by farmers 1) . . . . .	...	116	116	112	105	103	106	123	107	124
Agricultural wages 1) . . . . .	—	86	—	—	78	—	2) 84	2) 113	86	116
<b>UNITED STATES</b> (Bureau of Labor) 1926 = 100.										
Grains . . . . .	...	58.2	63.9	64.6	73.4	57.4	33.2	51.3	39.4	53.0
Livestock and poultry . . . . .	...	45.4	46.7	45.9	47.4	46.6	41.9	55.7	48.3	63.9
Other farm products . . . . .	...	61.2	61.2	62.5	63.7	56.2	53.9	63.1	51.4	69.2
Total agricultural products . . . . .	...	55.7	57.0	57.6	60.1	53.2	46.7	58.7	48.2	64.8
Agricultural implements . . . . .	...	83.7	83.2	83.2	83.0	83.0	84.6	92.1	84.9	94.0
Fertilizer materials . . . . .	...	67.6	66.6	69.0	68.6	68.0	63.5	70.1	66.9	76.8
Mixed fertilizers . . . . .	...	68.3	67.8	64.4	63.3	63.0	65.6	77.7	69.4	82.0
Cattle feed . . . . .	...	60.4	64.2	78.0	82.4	55.8	40.8	59.8	45.9	62.7
Non-agricultural commodities . . . . .	...	74.4	73.7	72.0	70.7	67.4	67.5	71.0	68.3	73.0
Wholesale products in general . . . . .	...	71.2	70.8	69.5	68.9	65.0	63.9	68.3	64.8	71.1
<b>FINLAND</b> (Central Bureau of Statistics) 1926 = 100.										
Cereals . . . . .	...	81	83	92	93	92	90	81	90	77
Potatoes . . . . .	...	42	46	84	106	106	69	49	71	68
Fodder . . . . .	...	78	75	73	69	69	67	62	69	63
Meat . . . . .	...	58	64	66	64	68	54	51	61	64
Dairy products . . . . .	...	86	84	79	77	73	80	88	76	76
Total agricultural products . . . . .	...	74	74	75	75	75	74	72	74	72
Wholesale products in general . . . . .	...	90	90	90	90	89	91	87	90	84
<b>HUNGARY</b> (Central Bureau of Statistics) 1913 = 100.										
Agricultural and livestock products . . . . .	54	54	53	54	57	66	69	89	—	—
Wholesale products in general . . . . .	70	71	70	71	73	79	82	99	—	—
<b>ITALY</b> (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.										
National agricultural products . . . . .	276.74	272.46	274.73	268.77	261.20	268.08	327.61	336.80	339.63	343.11
Wholesale products in general . . . . .	275.33	277.01	280.71	282.45	285.26	284.98	301.89	328.74	309.91	341.57
<b>NEW ZEALAND</b> (Census and Statistics Office) Average 1909-13 = 100.										
Dairy produce . . . . .	...	95.6	89.7	86.2	85.7	82.9	94.5	102.5	93.4	98.9
Meat . . . . .	...	126.8	115.7	120.1	113.9	108.8	100.3	118.5	110.9	130.1
Wool . . . . .	...	73.8	73.8	73.8	65.8	62.6	60.0	66.3	62.5	67.9
Other pastoral produce . . . . .	...	95.0	90.9	94.5	81.8	66.7	62.0	69.1	62.2	76.7
All pastoral and dairy produce . . . . .	...	97.4	91.9	91.8	87.0	82.5	84.2	94.1	87.0	96.5
Field products . . . . .	...	117.8	118.2	115.8	116.0	114.8	95.6	105.4	110.2	115.5
Total agricultural products . . . . .	...	97.9	92.7	92.5	87.8	83.4	84.5	94.4	87.7	97.0

1) 1910-14 = 100. — 2) Octo ber.

COUNTRIES AND CLASSIFICATIONS	Nov.	Oct.	Sept.	Aug.	July	June	Nov.	Nov.	Year	
	1933	1933	1933	1933	1933	1933	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	115	119	120	116	112	116	116	110	120	125
Potatoes . . . . .	89	90	97	168	160	91	72	119	101	130
Pork . . . . .	86	86	87	78	76	81	95	88	91	96
Other meat . . . . .	99	103	105	106	107	115	101	121	109	218
Eggs . . . . .	127	99	99	82	71	60	142	132	93	108
Dairy products . . . . .	131	129	130	127	121	119	131	133	124	156
Concentrated feeding stuffs . . . . .	95	96	95	94	95	94	104	102	104	121
Maize . . . . .	80	81	83	83	82	85	91	81	90	108
Fertilizers . . . . .	83	84	83	92	92	92	87	86	89	105
<b>NETHERLANDS 2)</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	59	62	64	52	46	36	43	59	4) 42	4) 58
Animal products . . . . .	52	53	52	50	49	50	55	57	4) 51	4) 57
Total agricultural products . . . . .	54	55	55	51	49	47	51	58	4) 49	4) 57
Agricultural wages . . . . .	74	74	74	74	74	74	83	95	4) 81	4) 93
Wholesale products in general 3) . . . .	51.4	50.7	50.7	49.4	49.4	49.4	52.3	60.2	77.8	65.7
<b>POLAND 2)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	36.6	37.5	38.3	36.1	50.8	53.4	40.8	59.1	49.8	53.9
Worked-up plant products . . . . .	46.6	47.5	49.3	48.8	64.4	65.2	52.7	68.7	61.3	65.9
Total products of plant origin . . . . .	41.6	42.5	43.7	42.3	57.5	59.4	46.7	64.2	55.6	60.0
Animals . . . . .	41.6	42.9	45.1	43.7	40.8	41.8	39.2	43.7	43.1	55.8
Dairy products . . . . .	55.0	51.1	48.6	43.4	43.7	39.6	67.1	76.9	55.4	68.0
Total products of animal origin . . . . .	47.3	46.6	46.9	43.6	42.3	41.0	50.1	56.4	48.2	60.8
Total agricultural products . . . . .	44.0	44.2	45.1	42.8	50.4	50.7	48.1	60.3	52.0	59.7
Fertilizers . . . . .	...	98.6	98.6	103.2	99.8	99.8	107.6	118.5	105.5	120.2
Industrial products . . . . .	63.2	63.3	63.4	63.6	64.5	64.1	67.1	74.5	69.6	79.4
Wholesale products in general . . . . .	54.3	54.4	55.0	53.9	58.2	58.1	58.5	68.2	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank										
of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	53.7	49.9	48.0	49.3	58.1	61.1	59.7	70.9	67.5	74.3
Animal products . . . . .	58.2	57.5	58.2	55.6	54.0	57.8	60.2	63.6	56.6	72.2
Industrial products . . . . .	69.1	68.8	67.6	68.5	70.5	72.0	67.6	68.7	66.2	71.4
Wholesale products in general . . . . .	63.1	61.5	60.7	60.7	63.7	66.1	64.7	68.6	65.2	72.9

1) The agricultural years refer to the period 1 April-31 March. — 2) Average data for the year 1932 respectively 1932-33 are provisional.  
— 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Agricultural year 1 Jul-30 June.

## RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	15	8	1	24	AVERAGE					
	Dec.	Dec.	Dec.	Nov.	Nov.	Dec.	Dec.	Commercial		
	1933	1933	1933	1933	1933	1932	1931	1932-33	1931-32	
SHIPMENTS OF WHEAT AND MAIZE.										
Danube to Antwerp/Hamburg . . .	(shill. per long ton)	14/3	14/6	14/6	15/-	14/10 <sup>1</sup> / <sub>2</sub>	n. 13/7	n. 15/4	13/9	14/6
Black Sea to Antwerp/Hamburg . .	(shill. per long ton)	10/9	10/7 <sup>1</sup> / <sub>2</sub>	10/7 <sup>1</sup> / <sub>2</sub>	10/6	10/11 <sup>1</sup> / <sub>2</sub>	10/11	10/11	10/-	10/10
St. John to Liverpool 1) . . . . .	n. q.	1/9	n. q.	n. q.	n. q.	1/10 <sup>1</sup> / <sub>2</sub>	1/8	1/8	1/7	1/7
Port Churchill to United Kingdom .	(shill. per 480 lbs.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 3/-	n. 3/-
Montreal to United Kingdom . . . .	n. q.	n. q.	n. q.	n. q.	1/9	1/5 <sup>1</sup> / <sub>2</sub>	n. q.	n. q.	1/8 <sup>1</sup> / <sub>2</sub>	1/8
Gulf to United Kingdom . . . . .	2) 2/6	2) 2/6	2) 2/6	2) 2/6	1) 2/6	1) 2/6	2) 2/7	2) 2/7	2) 2/6	2/6
New York to Liverpool 1) . . . . .	1/6	1/6	1/6	1/6	1/6	1/6	1/7	1/7	1/6	1/8
Northern Range to U. K./Continent.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	2) n. 0.06	n. q.	2) 0.06	2) 0.09
North Pacific to United Kingdom (sh. per long ton) . . . . .	19/6	19/6	19/6	19/6	n. 19/6	n. 22/10	23/10	n. 20/10	n. 22/2	n. 22/2
Vancouver to Yokohama 1) (gold \$ per sh. ton).	2) 2.85	2) 2.85	2) 2.85	2.50	2.50	2.00	2.30	1.98	2.30	2.30
La Plata Down River, Necochea, Bahia Blanca 2) to U. K./Cont.	15/6	n. 15/-	n. 14/6	14/6	14/11 <sup>1</sup> / <sub>2</sub>	16/1	16/2	14/-	16/-	16/-
La Plata Up River 3) to U. K./Continent.. . . .	(shill. per long ton)	17/6	17/6	17/3	17/-	16/5	17/6	17/8	15/10	17/6
Karachi to U. K./Continent 4) . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 20/-	n. 20/-
Western Australia to U. K./Continent . . . . .	n. 25/6	n. 25/6	n. 25/6	n. 24/9	24/4 <sup>1</sup> / <sub>2</sub>	27/3	29/1	24/6 <sup>1</sup> / <sub>2</sub>	26/-	26/-
SHIPMENTS OF RICE.										
Saigon to Europe . . . . .	(shill. per long ton)	n. 25/-	n. 25/-	n. 24/-	n. 24/-	23/10 <sup>1</sup> / <sub>2</sub>	n. q.	1) n. 25/6	23/5	24/3
Burma to U. K./Continent. . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	26/4	n. 23/3	23/9

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastin, Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lb. — 6) Freight rates in U. S. currency.

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (—)			
	15 Dec. 1933	8 Dec. 1933	1 Dec. 1933	24 Nov. 1933	15 Dec. 1933	8 Dec. 1933	1 Dec. 1933	24 Nov. 1933
	1933	1933	1933	1933	1933	1933	1933	1933
Germany: reichsmark . . . . .	123.325	123.125	123.375	123.150	— 0.1	— 0.3	— 0.1	— 0.2
Argentina: paper peso *) . . . . .	110.789	110.789	110.967	131.872	— 49.6	— 49.6	— 49.6	— 40.1
Belgium: belga . . . . .	71.800	71.775	71.850	71.775	— 0.4	— 0.4	— 0.3	— 0.4
Canada: dollar . . . . .	3.315	3.335	3.300	3.270	— 36.0	— 35.7	— 36.3	— 36.9
Denmark: crown . . . . .	75.500	75.500	75.500	75.500	— 45.6	— 45.6	— 45.6	— 45.6
Egypt: pound 2) . . . . .	16.850	16.850	17.050	16.925	— 33.2	— 33.2	— 32.4	— 32.9
United Kingdom: pound sterling . .	3.262	3.285	3.260	3.190	— 37.1	— 36.6	— 37.1	— 38.5
United States: dollar . . . . .	20.250	20.215	20.220	20.200	— 0.3	— 0.4	— 0.4	— 0.5
France: franc . . . . .	69.375	69.500	69.500	69.000	— 23.5	— 23.3	— 23.3	— 23.9
Indo-China: piaster 3) . . . . .	126.726	126.587	127.734	125.598	— 33.0	— 33.1	— 32.5	— 33.6
Hungary: pengő 4) . . . . .	27.045	27.205	27.200	27.195	— 0.9	— 0.3	— 0.3	— 0.3
India: rupee *) . . . . .	101.802	102.223	102.087	99.574	— 60.6	— 60.4	— 60.5	— 61.5
Italy: lira *) . . . . .	207.650	207.750	207.875	207.975	— 0.3	— 0.3	— 0.2	— 0.2
Japan: yen . . . . .	57.825	57.825	57.825	57.825	— 0.5	— 0.5	— 0.5	— 0.5
Netherlands: florin . . . . .	n. 3.000	n. 3.000	n. 3.000	n. 3.000	— 3.2	— 3.2	— 3.2	— 3.2
Poland: zloty . . . . .	86.875	86.750	87.500	87.000	— 37.5	— 37.5	— 37.0	— 37.4
Rumania: leu . . . . .	15.325	15.337	15.337	15.325	— 0.2	— 0.1	— 0.1	— 0.2
Sweden: crown . . . . .								
Czechoslovakia: crown . . . . .								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling, 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) a conversion has been made, the original exchange rates on London being converted into Swiss francs by means of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

**RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES  
IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)**

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada United States	Denmark	Egypt	France Indo-China (2)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)
Germany . . . . .	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	6.080	0.979	1.362	0.653	4.526	0.478	0.593	2.123	39.825	8.040	1.235
Argentina . . . . .	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	14.326	2.200
Belgium . . . . .	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	0.939	0.145
Canada . . . . .	Dollar	4.198	2.356	35.959	1.000	3.731	20.230	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	33.751	5.183
United States . . . . .																		
Denmark . . . . .	Crown	1.125	0.631	9.637	0.268	1.000	5.422	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	9.045	1.389
Sweden . . . . .	Plastre	0.207	0.116	1.777	0.049	0.184	1.000	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	1.668	0.256
Egypt . . . . .	Franc	0.164	0.092	1.409	0.039	0.146	0.793	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.322	0.203
France . . . . .	Plastre (2)																	
Indo-China . . . . .	Shilling	1.021	0.573	8.750	0.243	0.908	4.923	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	8.213	1.261
Great Britain . . . . .	Pengö	0.734	0.412	6.289	0.175	0.653	3.580	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	5.903	0.905
Hungary . . . . .	Rupce	1.532	0.860	13.125	0.365	1.362	7.384	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	12.319	1.892
India . . . . .	Idra	0.221	0.124	1.882	0.053	0.196	1.065	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	1.776	0.273
Italy . . . . .	Yen	2.092	1.174	17.924	0.498	1.860	10.084	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	16.824	2.583
Japan . . . . .	Florin	1.687	0.947	14.454	0.402	1.450	8.132	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	13.567	2.083
Netherlands . . . . .	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	3.786	0.581
Poland . . . . .	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.202	0.031
Rumania . . . . .	Crown	0.124	0.070	1.065	0.030	0.111	0.599	0.756	0.122	0.169	0.081	0.563	0.059	0.074	0.264	4.953	1.000	0.154
Czechoslovakia . . . . .																		
Former Latin monetary union (3) . . . . .	Gold Franc	0.810	0.455	6.938	0.193	0.720	3.903	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	6.512	1.000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. —  
(2) 1 Gold plastre equals 10 francs. — (3) Data for purpose of comparison.

# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

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### EDITORIAL

#### Considerations on the Cellulose Problem.

The difficulties everywhere encountered by the farmer in the marketing of his products makes it necessary to consider agricultural questions rather in their immediate aspects than in their natural development. Without wishing here in any way to forecast the future it may fairly be assumed that the extraordinarily rapid improvement in the processes of treating and utilising farm products raises problems of primary importance, a discussion of which would appear opportune.

It has become the habit to study separately the various aspects of a certain number of broad questions considered as fundamental, because they concern an enormous mass of producers and consumers. Thus one sees in international conferences a tendency to treat the problems of wheat, wine, sugar, oils, meat, milk, eggs, textiles, timber, etc. in a manner which reveals the legitimate, but necessarily limited, interests of the persons concerned.

The time would seem to have come to widen the range of discussion taking into consideration that after all the form in which the agricultural products leave the farm is of less importance than the percentage of elements useful to mankind, and that it would be reasonable to study rather the varied aspects of absolutely general questions, such as the production of starch, sugars, fats, protein and cellulose.

This does not imply an attempt to harness agriculture to the shafts of chemical industry, any more than a futurist conception in which the farmer would see in the products which he has produced with nature's help only a collection of chemical elements, the grains of wheat, barley or rice being supplanted in his mind by so many grains of starch.

But it is impossible not to be struck by the rapid development of certain problems of interest both to agriculture and to chemical industry, the economic consequences of which may in the near future become of outstanding importance.

Let us consider, for example, the problem of cellulose, basing our facts on a recent publication by M. DUCLAUX, Professor at the College of France (1), which is of the greatest interest and contains strikingly original ideas.

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(1) *Annales de l'Office National des Combustibles liquides*, 1932, No. 2.

Cellulose, which forms the greater part of the structural tissues of plants, plays a part of primary importance in the nutrition of herbivorous domestic animals and of man. The synthesis of cellulose also, which takes place in the field at the expense of the carbonic acid of the air, is a fundamental natural phenomenon.

As an industrial raw material, cellulose already plays an immensely important rôle and is likely to increase in importance in the future. All the timber industries and a great part of the textile industries are based on cellulose. Moreover since 1889 certain new industries have taken on a tremendous development, as, more particularly, artificial silk, celluloid and its derivative, the cinematograph film, cellulose glazes, smokeless powder, etc.

Cellulose is the only industrial raw material which may be said to be inexhaustible, since agriculture is building up reserves all the time by exploitation of the soil, air, water and sunlight. This rôle of supplier of cellulose which has devolved upon the farmer seems of absolutely prime importance, and, without stressing the point further, a brief outline of the opinions of DUCLAUX, may here be given.

The present applications of cellulose have one characteristic in common, in that they utilise only the physical or even mechanical properties of the material.

Certain properties primarily demanded of it are resistance, transparency, plasticity, and as complete stability as possible. Unfortunately we are still far from a perfect knowledge of the mechanical and physical properties of cellulose. One essential characteristic however is known, namely that the various chemical reactions into which cellulose enters alter its physical properties only in a secondary degree. Like glass, cellulose is transparent and colourless; like metals it is tough, plastic, malleable and capable of taking and retaining indefinitely a given form without losing any of its properties. This similarity in properties between cellulose and metals is very striking and capable of important applications.

The study of natural fibres has finally made it possible to determine their constitution; it is known, for instance, that the elementary particles of cellulose are arranged in a fibre very much like the bricks in a factory chimney. A beginning has also been made in interpreting little understood facts such as the mercerisation of cotton.

Such research foreshadows the possibility of a veritable revolution in the textile industry when the day comes that we are able to obtain from some inexpensive form of cellulose, such as wood, for example, a fibre having the properties of natural cotton.

The results already obtained in the industry suggest that we should follow attentively the development of scientific studies on the applications of cellulose and encourage the reafforestation of waste lands.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

Review of the More Important Publications on Rubber Cultivation Issued in 1932 (*Part II*). \*

## TAPPING.

The results of an enquiry on the different tapping systems in use in Java in 1929 and 1932 was published by TENGWALL, (23).

In Java different estates modified the tapping system as an endeavour to lower the cost price. In many cases the AB (alternate daily) system of one cut over  $1/3$  circumference was changed to the ABC (every third day) system of one cut over  $1/2$ . The most important systems have been included in the following list. The figures indicate the percentage of the total number of estates ; if the application took place on more than one per cent of all the estates only was the figure included. Information was obtained from 438 estates in 1929 and from 360 in 1932.

TABLE I. — *Tapping systems used in Java.*

	1929 (338 estates)	1932 (360 estates)
$1/4$ daily. . . . .	3 %	—
$1/4$ every other day (week, month, etc.) . . . . .	3 %	—
$1/3$ daily (inclusive of other systems with more than 50 % tapping days) . . . . .	7 %	1 %
$1/3$ every other day (week, month, etc.) . . . . .	43 %	15 %
$1/3$ every third day (week, month, etc.) . . . . .	2 %	—
$1/2$ every other day (week, month, etc.) . . . . .	33 %	39 %
$1/2$ every third day (week, month, etc.) . . . . .	9 %	34 %
$2 \times 1/3$ every third day (week, month, etc.) . . . . .	—	1 %
$2 \times 1/2$ every other day (week, month, etc.) . . . . .	—	1 %
$2 \times 1/2$ every third day (week, month, etc.) . . . . .	—	1 %
Other systems . . . . .	—	8 %

The two systems of  $2 \times 1/2$  circumference every other day or every third day are, conceivably, applied in fields which have to be replanted. It is interesting to compare the situation in Java with that in Malaya, as it was described by GRIST (see this *Bulletin* 1932, No. 6, p. 207).

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\* For Part I see *Bulletin* No. 6, pp. 248-256.

\* *Tec. 7 Engl.*

TABLE II. — *Tapping systems used in 1931 in Malaya*  
(in percentage of the total number of estates).

1/4 daily . . . . .	3 %
1/3 daily . . . . .	3 %
1/3 every other day . . . . .	4 %
1/2 every other day (straight or spiral) . . . . .	21 %
V over 1/2 every other day . . . . .	30 %
ABC systems, rotational and periodic systems . . . . .	21 %
Other systems . . . . .	18 %

The grouping of tapping systems is somewhat different in the publications of TENGWALL and of GRIST.

It is apparent that tapping every other day over 1/2 circumference (either straight or in spiral or in V) is very much applied in Malaya (in 51 % of the estates) while the system of 1/2 every third day, which has become so popular in Java is rarely seen. Many estates (21 %) apply a periodical system and the ultra conservative system of a periodical system with alternate daily tapping is most generally used. The tendency is for the adoption of a scheme somewhat of the nature of a 4 months rest in 12 months, trees being tapped alternate daily on a V over half the circumference of the tree.

The enquiry of TENGWALL included also the question of the number of trees per coolie and per day. About half the number of the estates in Java did not modify in the last two years the number of trees per coolie, about one third of the estates gave more trees (there are at present estates which have tapping tasks of 500 trees !), on the other hand several estates (in total 57) have decreased the number. In some cases the decrease was accompanied by an increase in the length of the cut, but not always. The managers who decreased the number of trees but did not increase the length of cut declared that in their opinion small tasks give a higher profit than large tasks.

In connection with the replacement of the AB (every other day) system over 1/3 on different estates in Java by the ABC (every third day) system over 1/2, the investigation of SNOEP (24) about the results of the two systems applied during a great number of years deserves interest. The figures can not all be reproduced here and only the final result may be given. In the two years before the experiment was started, both fields were tapped with the every other day system over 1/3 and the yield of field A (69.5 ha) was 104 % of that of field B (77.1 ha). In the course of the following 8 years after the every-third-day system over 1/2 had been introduced in field A, the production per year was in this field 524 kg dry rubber per ha or 103 % of the yield of field B. This experiment confirms that the yield with an ABC system over 1/2 is about the same as that of an AB system over 1/3. In this experiment the brown bark disease was of about the same frequency in both systems (3.4 % in field A against 3.8 % in



field B). A similar experiment in another estate confirmed the conclusion reached in that mentioned above.

In the previous review (this *Bulletin* 1932, No. 6, p 208) it was pointed out that the low rubber prices had given another aspect to the question of which tapping system is the most profitable. In the meantime the rubber prices have dropped further and economizing on the tapping costs has become still more urgent. Which system is the most profitable depends largely on the wages of the tapping coolies. GONGGRYP (25) tried to figure out for the East Coast of Sumatra the costs and profits of the different systems. In these calculations he made use of data supplied previously by SCHMÖLE (26). The different modifications to be considered were grouped by GONGGRYP in the following way:—

- (A) The labour expenses remain the same, the production per tapping-coolie is increased.
  - (1) The cut is made longer ; (2) the cut is made thicker (bark-consumption is increased) ; (3) the cut is made deeper ; (4) only the lower part of the tree is tapped.
- (B) The labour expenses are lowered.
  - (1) Introduction of selective tapping (i. e., excluding a certain number of the lowest yielding trees) ; (2) introduction of ABC tapping (i. e., making the resting periods twice as long as the tapping periods) ; (3) increasing the tapping tasks inclusive of the system of tapping in the afternoon.

In figuring out the increase or decrease in yield and the decrease in expense GONGGRYP based his calculations on an average yield of 400 kg dry rubber per hectare and an average cost of 234.53 guilders per coolie per year. It would require too much space to reproduce here the costs and yield figures, for the different systems and we must refer the reader for these details to the original paper (25).

A practical contribution to our orientation in tapping economy was given by BOISSEVAIN (27), who investigated the financial consequences of modifying the ordinary (1) AB system (every other day tapping) with 1 cut over  $\frac{1}{3}$  circumference applied during 12 months, into the following systems: (2) AB system with 1 cut over  $\frac{1}{3}$  during 9 months ; (3) AB-system with 1 cut over  $\frac{1}{2}$  during 9 months; (4) ABC system (every third day tapping), with 1 cut over  $\frac{1}{2}$  during 9 months.

The total bark consumption per year in the four systems was respectively: 252 mm, 252 mm, 378 mm, and 304 mm.

The yield of the four systems per acre per year could be figured out as being the same in the three systems (1) (2) and (4), viz., 378 lbs per acre, and in system (3) as being 434.7 lbs per acre. The expenses for tapping, preparation, packing, transporting, insurance, etc., per acre (1) 17,942 guilders ; (2) 15,282 guilders ; (3) 16,414 guilders ; (4) 12,852 guilders ; or per lb : 4.746, 4.034, 3.776 and 3.40 cents (Dutch).

These figures may be summarised in the following table:—

TABLE III.

	(1) A B over $\frac{1}{3}$ 1 cut, 12 months	(2) A B over $\frac{1}{3}$ 1 cut, 9 months	(3) A B over $\frac{1}{3}$ 1 cut, 9 months	(4) A B C over $\frac{1}{2}$ 1 cut, 9 months
<i>Tapping system</i> . . . . .				
<i>Bark consumption</i> . . . . .	252 mm	252 mm	378 mm	304 mm
<i>Yield of 1000 acres</i> . . . . .	378 000 lbs	378 000 lbs	434 700 lbs	378 000 lbs
<i>Total costs for 1000 acres</i> . .	17 942 florins	15 282 florins	16 414 florins	12 852 florins
<i>Cost per lb</i> . . . . .	4.746 D. cts.	4.034 D. cts.	3.776 D. cts.	3.400 D. cts.

It is thus apparent that system (2) gives the same yield as system (1) but realizes an economy of 2,600 guilders per 1000 acres; and that if system (2) is modified into system (4) the yield remains the same, but an economy of 2,400 more per 1000 acres is realized. System (4) gives thus at any rate a considerable economy in comparison with the old system (1), for the same yield is obtained and an economy of 5,090 florins per 1000 acres or 1,346 D. cents per lb is realized; the only drawback is that the bark consumption is increased from 252 mm to 304 mm per year. As to system (3), which is the same as (2) but with one cut over  $\frac{1}{2}$  instead of over  $\frac{1}{3}$ , this system gives a higher yield than the 3 other systems, viz., 434.7 lbs per acre. The cost is lower and the yield is higher than in (1) and (2) and it is therefore at any rate more profitable (apart from the bark consumption which is 378 mm against 252 mm per year). Comparing systems (3) and (4) we see that the costs per acre, but the yield also, are higher in (3) than in (4): the expenses are 3,562 florins higher and the yield is 57 lbs higher. Which of these two systems is the more profitable depends on the market price: if this price is higher than  $\frac{356.2}{57} = 6.25$  cents per lb, system (3) is more profitable, if the price is lower than 6.25 cents, system (4) is more profitable.

As AB system any system may be chosen with an equal number of tapping days and rest days; according to the experiments of VAN BALEN (see this *Bulletin*, 1932, No. 6, p. 209) the 20-days periodical system would give the highest yield. This corresponds well with the results of the investigations of GRANTHAM who found that a period of 3 weeks gave the highest yield, viz., a yield of 100 against 83 with a 15 days period and 87 with a one month period.

Another question, discussed by BOISSEVAIN, was, what profit could be expected from "selective tapping", namely by eliminating from tapping the 20 % lowest producing trees. According to investigations on 4 different estates on the east coast of Sumatra this would give a loss of 10 % of the total yield. The calculations of BOISSEVAIN show that in fields tapped with system (3) or (4), even with a very low market price the decrease in costs would not be sufficient

to counterbalance the loss in rubber. His conclusion is that no profit is to be expected from "selective tapping" in fields on which selective thinning-out has been applied.

The conclusion, that the ABC system on  $1\frac{1}{2}$  circumference has great advantages was also reached by MAAS in his discussion of the evolution of tapping systems (28). The experience gained on the Government Rubber Plantations was that in modifying the AB system (alternate daily) over  $1\frac{1}{2}$  into the ABC system over  $1\frac{1}{2}$ , the production which dropped in the beginning to 85 % increased in the course of the first year to 95 % of the yield of the AB system. MAAS pointed out that with the ABC system over  $1\frac{1}{2}$  the time for bark renewal is 9 years which makes the trees continue to increase in production for a longer time. With the old alternate-day system the trees generally begin to decrease in production with the 15th year; with the ABC system they continue increasing in production in the 16th and 17th years and it may be that this increase will still continue during several years.

In Malaya discussion arose concerning the cessation of tapping on Sundays. It was suggested that resting the trees on Sunday would reduce the output of rubber by one seventh, but opinions varied, and it was a moot point whether the extra rest day would perhaps benefit the trees and so reduce the loss in crop below one seventh, or would increase the loss by disturbing the tapping system.

To elucidate this question EATON and MORRIS (29) carried out experiments on 8 estates. The result was, that the average loss of crop (11.3 %) was slightly less than the proportional reduction in the number of tapping days (15.1 %).

The tapping experiments of HEUSSER and HOLDER (30) with  $2 \times 1\frac{1}{4}$  cut over  $1\frac{1}{4}$  circumference on budgrafts were described in detail in the previous review (see this *Bulletin*, 1932, No. 6, p. 211). They were continued in 1931, only the tapping of the control plots with 1 cut over  $1\frac{1}{3}$  with the clones and with seedlings could not be continued. The production of the 4 clones was in the four experimental years as follows:—

Clone	Av. 51:	3.0,	4.8,	6.5,	7.4	kilogrammes	per tree
"	Av. 80:	3.2,	4.8,	6.7,	7.4	"	" "
"	Av. 65:	4.4,	4.9,	7.6,	7.0	"	" "
"	Av. 53:	—	5.2,	8.1,	8.7	"	" "

The production per hectare can be reckoned as having been in the 4th tapping year (the 9th year of life of the budgrafts): 1472, 1485, 1409 and 1752 kilogrammes.

In replanting fields the old trees are generally treated during one to three years with some drastic tapping system in order to obtain as much rubber as possible before the trees are cut down. The drawback of most of the drastic tapping systems is that many of the trees do not stand the treatment and "run dry", contracting brown bark disease. HOLLAND (31) carried out an experiment to solve the question whether this occurrence of brown bark was due to the fre-

quent (daily) tapping, to the two-cut system or to the deep tapping (to the wood).

Four systems were applied during six months on 91 trees each: (1) alternate day tapping on one cut on  $1/2$  circumference; (2) this same system but on two cuts to the wood; (3) daily tapping on two cuts to the wood on  $1/2$  circumference; (4) this same system, but ordinary tapping (not to the wood). In these 4 systems the percentage of total cuts gone dry was respectively: 4.4, 11.0, 38.4, and 35.4, and the yield obtained (in percentage yield as compared with that of No. 1): 100, 195, 143, 164. From these results it would appear that tapping to the wood gives an appreciable increase of yield not accompanied by any considerable increase in the number of cuts gone dry. Tapping daily, however, compared with alternate daily resulted in greatly increased drying up of cuts. In the two cuts systems a far larger number of top cuts dried up than bottom cuts, so that it is suggested that if two cuts are to be tapped, it would be better to place such cuts on opposite sides of the tree or in echelon.

A contribution to our knowledge of the yield to be obtained with different tapping systems, was given by GALANG and EJERCITO (32) who recorded the results of a five years experimental tapping in Baco, Mindow (Philippines). The systems applied were: daily, alternate daily, alternate weekly, alternate bi-weekly, alternate tri-weekly, alternate monthly, every two days, every 3 days, every 4 days, every 5 days, every 6 days, every 6 months, half spiral daily, half spiral alternate daily, V-cut daily, V-cut alternate daily, opposite V-s,  $1/4$  spiral daily,  $1/4$  spiral alternate daily,  $1/5$  spiral daily,  $1/5$  spiral alternate daily.

In a progress report of tapping experiments SCHMÖLE (33) described the results obtained so far in 4 experimental fields on the estates "Goodyear", "Batang Serangan", "Polonia" and "Gloegoer", all situated on the east coast of Sumatra.

In the "Goodyear" experiment the yield of the clones Av. 49 and Av. 152 was compared in (a) periodical tapping with a period of one month, (b) periodical tapping with a period of  $1/2$  month and (c) every other day tapping. Tapping was always done over  $1/2$  circumference. The yield was recorded before the experiment was started from June to August 1930 and during the experimental tapping from September 1930 to April 1932. The preliminary conclusion is that with both clones the yield is highest in  $1/2$  month periodical tapping, it is lower in 1 month periodical tapping and again lower in every other day tapping.

In the "Batang Serangan" experiment tapping over  $1/3$  circumference 1 month periodical (AB tapping) was compared with 3 months periodical (ABC tapping).

Four months after the beginning of the experiment the arrangement was changed in so far that in the ABC tapping the cut over  $1/3$  was prolonged over  $1/2$  circumference.

The preliminary conclusion is, that the yield of the ABC tapping over  $1/2$  circumference, which was in August 1931 89 % of the yield of AB over  $1/3$ , was gradually increasing in yield up to about 100 % in June 1932.

In the "Polonia" experiment 5 different systems were compared in clone 49: (a) 1 cut over 1/2 circumference, monthly-periodical; (b) 1 cut over 1/3, monthly-periodical; (c) 2 cuts over 1/2 above each other, monthly-periodical, one cut tapped; (d) 2 cuts over 1/2 opposite each other, monthly periodical, one cut tapped; (e) 2 cuts over 1/2 above each other, monthly periodical, 2 cuts tapped. The trees were all first tapped with 1 cut over 1/2 from August to October 1930. In comparison with the yields obtained with system (a) the yield obtained from December 1930 to May 1932 with the systems (b), (c), (d) and (e) were as follows: (b) 75-83 %; (c) 122-140 %; (d) 131-146 %, (e) 110-127 %.

The second "Polonia" experiment comprised experimental tapping at two heights with clone 49: (a) at 150 and 115 cm, (b) at 100 and 65 cm and (c) at 50 and 15 cm. In comparison with the yield of (c), the yields of (b) and (a) were: (b) 79-90 %, (a) 67-82 %.

In the third "Polonia" experiment the yield of buddings of clone 49 and seedlings of clone 49 (self pollinated and crossings 49 × 33) were compared.

The yield in kg dry rubber per tree was:—

	1st tapping year	2nd tapping year
Seedlings 49 . . . . .	1,191 kg	2,757 kg
Budded trees 49 . . . . .	1,610 kg	3,218 kg

On the estate "Gloegoer" two experiments were started with unselected seedlings: in the first experiment monthly periodical tapping over 1/2 circumference (AB system) was compared with an ABC system, in which tapping every other day was done during 2 months, followed by one month's rest. The result during the period August 1931 to July 1932 was that the yield of the ABC system was 88 % of that of the AB system.

In the second "Gloegoer" experiment the yield of monthly periodical tapping over 1/2 (AB system) was compared with the yield of an ABC tapping system in which tapping daily over 1/2 was done during one month followed by 2 months' rest. The result during the period August 1931 to July 1932 was that the yield of the ABC system was 83 % to 85 % of that of the AB system.

A selection system consisting in eliminating from tapping the least productive trees was described by a planter in Java (34). The question he had to solve was, whether it would be paying to eliminate from tapping 30 % of the trees. The area of the plantation was 151.60 ha with 34,272 trees. Tapping was done with the ABC system of 2 months' tapping and one month rest. Total of tapping days, 208; number of tapping coolies, 97. Total production, 112,184 kg, or 740 kg per hectare.

If 30 % of the trees are eliminated also 30 % of the tapping coolies are set apart, which means a saving of the wages of  $29,208 = 6,052$  days. The elimination of the least productive 30 % of the trees, gives, according to a well-known calculation, a loss of rubber of 15 % of the whole production, or in this case a loss of 16,827 kg rubber.

The question : " Is it paying to eliminate 30 % of the trees ? " is dependent on the other question : " Which represents more money, the net profit of 16,827 kg, rubber or the wages for 6,052 tapping days ? ". The net profit is the market price less the cost of transport and preparation (this last mentioned cost is 5.2 cent per kg rubber). It is thus apparent that in this case the elimination of 30 % of trees is paying, if the net profit of 1 kg rubber, is lower than  $\frac{6032}{16827}$  of the wages for one day tapping. If for instance the wages for one day are 30 cents there is gain by the elimination of the trees, if the net profit of 1 kg rubber is lower than  $\frac{6032}{16827} \times 30 = 10.75$  cents, or if the rubber price is lower than  $10.75 + 5.2 = 15.95$  cents.

This calculation may serve as an example how to figure out the profit or loss caused by the elimination. Yield figures of 17 to 18 years old trees in Abukay, Bataan, Philippines, (35), were given in monthly figures for the period April 1926 to November 1929. The yield was about 2,564 kg of dry rubber per tree or about 467 kg per hectare.

#### SELECTION.

The *area planted with selected material* on the estates in Sumatra (36) was increased in 1931 by 16,442 ha of budgrafts, 892 ha budgrafts and seedlings mixed, and 525 ha selected seedlings, total 17,859 ha, of which 439 ha were replanted and 17,420 new clearings.

The total area, planted in Sumatra with selected material amounted at the end of 1931 to 131,262 ha or 46 % of a total of 296,680 ha.

In Malaya the area planted with budgrafts amounted at the end of 1930 to about 53,600 ha or 134,000 acres.

The experience of a planter on the *technique of budding* is given by SCHINDLER in an article in which some details of the different operations are discussed (38).

MURRAY and PIERIS gave a detailed description of budgrafting as it is done on the Rubber Research Scheme Experiment Station at Nivitigalakele, India (39).

In the budding operation various questions of detail are still unsolved. Among these are the questions of the most successful age of the bud-wood and of the most successful length of time before the opening of the bud.

SHARP (40) submitted these questions to research and investigated :—

- (1) whether the use of immature budwood on large stocks would have any effect on the number of successful buddings ;
- (2) whether a higher proportion of success could be obtained by extending the period before opening beyond the normal time of 18-20 days ;
- (3) whether either or both of these departures from the normal budding practice would have any effect on the rate at which the buddings would begin to shoot.

The clones used in this experiment were BD 5, Av 152, Av 50, SR 9 and PB 186. The trees budded were 32 months old with a mean girth of 12.5 inches and it must be borne in mind that the results only apply to large stocks. The conditions of budding were in so far favourable that the delay between the cutting and using of budwood could be reduced to a minimum. The results of these experiments were as follows:—

(1) by increasing the period before opening from 18 to 23 days the percentage of success was increased from 69 to 82 while the time of shooting was delayed; no advantage was obtained by extending the period to 28 days;

(2) fully matured budwood gave a higher proportion of success than immature wood except in the case of BD 5 for which clone immature wood gave as good results as the mature wood;

(3) the time elapsed before the buds shot was much reduced in the case of Av 50 and BD 5 by the use of green budwood, but with the other clones there was no corresponding reduction.

A new method of fastening the bud was described by PLANCHON (41). The method, which was termed "*le garrot*" ("the toggle") consists mainly in the replacement of the waxed tape by a piece of galvanized iron wire, under which at the place of the bud a piece of bamboo is fixed.

The advantage of this method is that the watery fluid which is secreted by the tissues of the stock can run away and does not remain, as it does when waxed tape is used. Another advantage is the cheapness of the method; the inventor claims that a coolie can make 250 to 300 buddings per day with the new method, which means more than twice the number made with the old method. The description of the method is well illustrated by instructive photographs.

When the bud has grown together with the stock, the latter is sawn off. In order to avoid rotting and die-back the cut surface is often treated with some disinfectant. In the previous review (see *Bulletin* 1932, No. 6, p. 236) the investigations of SHARPELESS and MANN on this subject were recorded. BARAT investigated (42) the suitability of different disinfecting mixtures and recommends the following: (1) "dan" oil (oil of *Dipterocarpus alata*) 2 to 4 parts, resin 1 part, lime 1 part; and (2) coal tar 1 part, resin 1 part.

A modification of the ordinary method of budding was applied by a planter in Sumatra (43). The incision in the bark of the stock is made in U-form and not in the inverted U-form as usual. After the insertion of the bud the stock is wrapped round with a piece of leaf of the areng-palm (*Arenga saccharifera*), oil-palm or coconut-palm instead of with waxed tape. This piece of leaf is fastened with rope. The percentage of successful buddings obtained with this method is not lower than when waxed tape is used and the costs are much lower.

It has become more and more desirable to be able to identify the different clones by their morphological characters. The greater the number of clones planted on the plantations the greater the chance that different clones are mixed up. The discovery of BOBILIOFF that the latex of different clones shows different enzymatic reactions, formed an important contribution to

the identification of clones (see this *Bulletin*, 1932, No. 5, p. 164). Of no less importance is the work of FREY WYSSLING, HEUSSER and OSTENDORF, who subjected the morphological characters of the different clones to an extensive investigation (44). The characters which they use in the identification are the following :—

- (1) *Characters of the leaflets*: the shape and size of blades (or laminae) of the leaflets, the cross and longitudinal sections of the laminae, the position of the laminae, their margin and venation, the colour lustre and feel of the laminae, the hairiness of the young leaflets, the stalk (or petiolule) of the leaflet, the number of leaflets;
- (2) *Characters of the stalk (petiole) of the leaf*: shape and direction of the petiole, abnormalities in the extra-floral nectaries, the shape of the base of the petiole (pulvinus);
- (3) *Characters of the stipules*;
- (4) *Characters of the bud-scales and abortive leaves*;
- (5) *Characters of the stem*: type of the growth storeys ("payongs"), the arrangement of the leaves on the stem (phyllotaxis), the shape and number of buds per shoot, the characters of the bark (colour, fissures, etc.).

The authors give a description of 15 Avros-clones (Nos. 33, 35, 36, 49, 50, 71, 80, 150, 152, 157, 163, 183, 185, 214 and 256) and of nine clones from Java (Bd. 2, 5 and 10 — BR 1 and 2 — Ct. 88 — Tjir I and XVI — War. 1). To give an impression of the method followed, the description of clone BR. 2 may be copied here :—

*Habit.* — "Growth in length only moderately rapid; the buddings have a straight and moderately thick stem. Growth storeys rather variable as regards shape and segregation; all intermediate forms, between hemispherical caps, well separated by a fairly long leafless piece of stem, and lamp-brushes, occur. Because of the position and the considerable breadth of the blades the storeys usually show a rather closed surface.

*Leaf* (pl. XLVI). — "Petioles horizontal and arched, not very long. Petiolules in continuation, moderate length. Laminae dark green, thick and leathery, lustrous. They are broad and have a very regular elliptical shape, broadly rounded at base and apex, with a short rather abrupt tip and an absolutely flat margin. The blade is usually spread out quite flat and follows the surface of the storey, and the margins of the leaflets of one leaf overlap. Polyphyly has not been observed. The contrast between the dark green old leaves and the yellowish green shade of the young leaves is very striking, the latter colour being retained even till the young leaves are already turgid and raised".

Interesting investigations on the mutual influence of stock and scion were made by VAN DER HOOP and OSTENDORF (45). The material investigated at Wangoen Redja Estate was the same as the material used previously by BOBRILOFF for similar investigations, but this time the research was done on a much



larger scale. The seedlings of the experimental field were partly budded at 1 metre above the soil with buds of 24 different mother trees and were partly left unbudded. Of the budgrafts the girth, the number of latex-vessels and the yield were investigated in stock and in scion and compared with the same in the seedling.

These investigations lead to the following conclusions:—

(1) The rate of increase in girth of the scion greatly influences that of the stock, presumably because both are determined by the same factor, namely the extension and the activity of the crown. The influence of the growth of the stock on that of the scion is perceptible but less important.

(2) The number of latex vessels of the stock is independent of that in the scion, while in this respect the influence of the stock on the scion is small.

(3) The yield of the stock is strongly influenced by the character of the scion. This influence is so marked, that, generally speaking, the yield of the stock per unit of circumference is about the same as that of the scion. The yield of the stock has no appreciable influence on that of the scion.

The practical conclusion is that high budding with the purpose of tapping the stock should be done with high yielding clones. Preferably these clones should be quick growing while the number of latex vessels is of no importance. The use of high yielding stocks has no advantage, but the use of quick growing stocks is to be recommended in order to ensure a quick growth and a high yield of the buddings, while additional advantages are the higher percentage of success in budding and the fact that tapping can be started at an earlier age.

The conclusion, that the yield of the stock has no appreciable influence on that of the scion, was also reached in an experiment of CRAMER (46), in which budgrafts were made on high yielding and on poor yielding seedlings. This was done in 1923. In 1928 and 1929 the two groups of seedlings and the two groups of budgrafts were tapped. The difference in yield between the two groups of seedlings was striking, but no difference was found between the two groups of budgrafts.

Yield figures of the different clones in Java and Sumatra were again published by the Experimental Stations (47, 48, 49, 50, 51). The results of the experimental tapping of the Malayan clones are not so regularly recorded, but information on the most promising of these was given by OSTENDORF (52), MURRAY (53) and MACFADYEN (54).

Yield figures of some proved clones of Java, Sumatra and Malaya may be given here. The Java and the South Sumatra (Lampungiana) clones were tapped with one cut over  $\frac{1}{3}$  circumference alternate daily, except Tjirandji 1, which was tapped since October 1928 on  $\frac{1}{4}$  circumference, and BD 2 which was tapped with one cut over  $\frac{1}{4}$  in 1930.

The Avros clones were tapped with one cut over  $\frac{1}{3}$  alternate monthly. The Malayan clones were tapped with one cut over  $\frac{1}{2}$  circumference alternate daily.

The figures indicate the yield per tree in kg. In some cases the yield was only published by the author in grams per tapping; these figures have not been used.

- (1) BD 2, 5, 51, 7, 10, 16 and 17 (13 years old) : 6.0 — 13.6 — 12.1 — 6.8 — 9.6 — 9.4 — 8.6.
- (2) Tjir. I, II, III, VIII, X and XVI (11 years old) : 18.8 — 7.1 — 8.0 — 8.2 — 6.3 — 9.7.
- (3) Pi. trots 1, 2, 3, 5 and 6 (11 years old) : 6.0 — 11.7 — 8.8 — 5.6 — 6.2.
- (4) Lampongiana 1, 2 and 4 (9 years old) : 11.0 — 15.2 — 7.3.
- (5) Av. 27, 28, 35, 36, 49 and 139 (10 years old) : 3.8 — 4.4 — 4.9 — 3.7 — 6.8 — 4.3
- (6) Av. 33, 49, 51, 53, 65, 71, 80, 152, 163, 182 and 147 (8 years old) : 5.4 — 6.5 — 4.3 — 5.6 — 4.2 — 6.0 — 4.6 — 6.8 — 5.9 — 5.3 — 5.2.
- (7) Av. 33, 36, 49, 50, 52 and 80 (11 years old) : 7.1 — 6.6 — 7.8 — 7.5 — 6.7 — 7.2.
- (8) PB 23, 24, 25, 123, 180 and 186 (8 years old) : 9.6 — 8.2 — 8.7 — 7.6 — 9.8 — 12.5.

For other particulars regarding the different clones reference may be made to the original publications (47, 48, 49, 50, 51, 52, 53, 54 and 59).

The Experimental Station of West Java started in 1926 a new series of clone testing experiments in the Experiment Garden Tjiomas. The clones tested are three Avros clones (Av. 36, 50 and 152), six "Cultuurtuin" clones (C. 3, 9 and 88, Br. 1 and 2, and SR 5) and 13 clones of mother trees from different places. The clones have been planted in "unit plots" each of one row of 5 trees 6 m apart, the distance between the rows being 7 m. The tests are repeated for most purposes three times. The yields and other data of the first tapping year (June 1930-May 1931) were published (55). After a few years the yield figures will form a welcome contribution to our knowledge of the productivity of these clones.

The legitimate seedlings from selected parents enjoy increasing interest. The yield figures obtained by HEUSSE in 1930 and 1931 from the legitimate *Hevea* seedlings in the Soengei Pantjoer Experimental Gardens, (56,57), confirm the opinion that from legitimate seedlings as good or perhaps better yields may be expected as from budgrafts. HEUSSE gave figures of the following three groups of seedlings: (a) seedlings obtained from the 1920 crosses, (b) seedlings obtained from seed of the isolated seed gardens, and (c) seedlings from the 1923 crosses.

From these three groups the following yield figures may be given here:—

(a) In 1930 and 1931 — the 5th and 6th tapping years of the 161 seedlings obtained from the 1920 crosses — the yield per tree per year was : in 1930, 5.3 kg, against 2.7 kg of the illegitimate seedlings, and in 1931, 5.1 kg against 2.1 kg; the yield per hectare may be calculated as : in 1930, 838 kg as compared with 534 kg of the illegitimate seedlings and in 1931, 828 kg against 437 kg. The differences in yield between the families of crosses have become still more pronounced than in previous years, and, generally speaking, the good families show a greater increase in yield than the poorer yielding ones. The families 157, 161, and 164 again excelled in high yields. *The yields of these*

families are not inferior to those of the best clones, notwithstanding no selective thinning was carried out.

The highest yield was obtained from the following crosses: 157 × 164, 157 × 161, 166 × 161 and 164 × 161; the seedlings of these four crosses gave in 1930 and 1931: 9.11 and 7.08 kg, 9.26 and 7.02 kg, 7.79 and 8.51 kg, 7.44 and 7.61 kg per tree per year.

HEUSSER gave in his first paper (56) interesting observations on the variability of the yield of the seedlings. By dividing the trees into yield classes an idea can be formed of what can be obtained by selective thinning out. The writer divided the trees of the families according to their yield into 10 groups each containing 10 % of the trees. The first group contains the lowest yielders, the next group contains the next lowest yielders, etc., and he calculated which percentage of the yield each group contains. Over a period of 5 tapping years the share of the poorest 10 % of the trees, the poorest 20 % of the trees, etc., is as follows:—

TABLE IV.

Poorest % of trees.	10	20	30	40	50	60	70	80	90	100
Yield percentage. .	2.4	7.0	13.0	20.3	29.0	39.0	50.0	64.2	80.1	100

Data were gathered about the girth of the trees and about the occurrence of brown bast for each family.

(b) Of the seedlings, obtained from the isolated seed-gardens, 4 families were planted in 1922, 3 families in 1923 and 14 families in 1924. In the years 1930 and 1931 these seedling-families were respectively 8 and 9 years, 7 and 8 years, and 6 and 7 years old. The yields of the highest yielding of these families are given in the following list.

TABLE V.—*Annual yield in kg of dry rubber.*

No.	6th year	7th year	8th year	9th year
33 × 33 . . . . .	8.0	9.7	12.6	9.5
33 × 33 or 33 × 51 . . . . .	5.6	6.9	13.7	—
8 × 8 or 8 × 50 . . . . .	5.7	6.3	10.0	9.1

(c) The crosses of 1923 are all descendants of the mother-tree 204. The year 1930 was the 7th and 1931 the 8th tapping year. The highest yield was obtained from the seedlings of the crossing 204 × 202, namely 27.0 gram (in 1930) and 34.9 gm (in 1931) per tapping per tree. The lowest yield was given

by the seedlings of the crossing  $204 \times 204$ , namely 10.6 gm (in 1930) and 17.2 gm (in 1931).

Also in Java experimental tapping has been carried out with legitimate seedlings. These seedlings were grown from seed obtained by self-pollination of selected clones. The results over the first three years of experimental tapping of the crosses, obtained by the Besoeeki Experimental Station, were published by s'JACOB (58). As only figures of the average yield per tapping are given, a reliable comparison with the Avros seedlings of HEUSSER can not be made. For such a comparison figures of the yield per years would be necessary. Moreover the number of trees of the Besoeeki families is rather small. With these reservations it may be said that the average yield per tapping of the Pr-families (the letters Pr are the indication of the mother trees, clones and seedling-families of the Besoeeki Experimental Station) compare favourably with the yield of the Avros-families as the following list shows:—

TABLE VI. — *Average yield of legitimate seedlings per tapping per tree in grammes.*

Families	1st year	2nd year	3rd year
Pr 7 . . . . .	12.7	22.9	21.9
Pr 2 . . . . .	9.6	10.5	—
Pr 14 . . . . .	7.3	14.4	—
Av., total of all families of legitimate seedlings .	7.5	18.6	20.4
Av., highest yielding family . . . . .	10.1	28.1	34.6

In Besoeeki the yield of the best seedling families was about the same as that of the best clones.

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## New Principles in the Collection and Preservation of Forest seeds.

The satisfactory regeneration of forests that have for a long period been worked under management schemes is among the most difficult of silvicultural problems.

As a rule such forests are in a condition of constant productive activity and any effort of the stands to desist therefrom is useless in face of the regular insistence of the forest manager. During this period of struggle as it were on the part of the forest to revert to its original state of "sylva", certain biological factors in the life of the stands will adapt themselves to the new conditions, while others, and especially the genetic factor, run the risk of suffering material damage. The result sooner or later will be the progressive degeneration of types and species.

Genetic studies confirm to an increasing degree this unsatisfactory behaviour as regards reproduction, which is so completely different from what is to be found in primitive forests or in those not yet brought under a scheme of management, where the forest formations tend to become perpetuated with a slight evolutionary tendency towards "peak" types.

Such a state of things, which is regrettable enough where regeneration in the forests under schemes of management proceeds by natural methods, is still more serious where artificial methods are employed, as also for new plantations. In such cases the forester cannot rely on the assistance of natural selection in seeing that only the best seeds prevail but he will be forced to employ seeds of uncertain origin, which as a rule will be far from establishing the best kind of varieties. The reason may be put down to the lack of care of those who collect the seeds, who are likely to look rather to their profits than to sound technical principles but, even if it be granted that there may be some truth in this view, it must at the same time be admitted that foresters themselves are not yet in possession of sufficiently determined principles regarding the choice of the most valuable trees as seed bearers, nor have they as yet any complete knowledge of the best methods for the proper conservation of forest seeds. In the Monthly Bulletin of Agricultural Science and Practice of 1931 (No. 1, pp. 31-35) this question has already been discussed from the point of view of the origin and control of the quality of these seeds and it now seems desirable to consider certain of its other aspects.

### IDENTIFICATION OF GOOD SEED-BEARERS.

When once a decision has been taken as to the region best suited from the ecological standpoint for seed-collection, the wise collector is at once confronted by the problem of the choice of suitable mother trees. In most cases this choice must depend upon an external examination, preference being given to well-shaped specimens, showing strong growth and generally having the characteristics of trees which have developed from their earliest days as fine specimens or have long become such. Trees perfect in their development may well be expected to be equally good from the point of view of their fruiting.



Despite these precautions, however, in practice results have by no means come up to expectation and, speaking generally, the situation of the cropping shows a tendency to become more serious on the technical side.

Recent experiment work and special studies have been directed to the problem of the reality of the correspondence between the external characteristics of the mother trees and their strong growth and the quality of the seeds of the strength of the young plants they produce. The question has been raised whether external phenomena always have the same effect on the fructification of the trees in a stand without taking account of the particular condition of growth of the various specimens. In order to reply, it is necessary to know in the first place the nature of these facts and what are their influences on the complex cycle of fructification in trees and this seems a very difficult matter.

M. HUMMEL (Germany), in making a special study of the periodicity of fruit bearing in a number of conifers in Central Europe, felt bound to state that the physiological aspect of pollinisation among pines has been all too little studied. It is a known fact that there enter certain stimulating agents apart from those that are purely genetic. So far however it has not been found possible to isolate the conditions in which intervention actually takes place and to follow up separately the various effects it produces. If there is no correspondence between the different phases of the fecundatory process and the action of these agents, fructification would be jeopardized. Cases of parthenocarpic fructification would thus in the majority of cases be the result of a faulty physiological reaction of the reproductive organs to the relatively stable action of the elements which stimulate or retard pollinisation.

Such misbehaviour may originate either in the particular conditions of the individual tree or in the general conditions of the stand. For example it is generally thought that the artificial combination of various species in a stand or the disproportions artificially maintained between the variety best suited to the environment and others, have an unfavourable effect on fructification. The numerous cases of parthenospermic cones observed would then be probably due to incomplete or retarded hybridisations, owing to the failure of a complete agreement between the times of pollinisation among the different trees.

Naturally the meteorological conditions of the year and particularly those of the pollinisation period control the phases of reproduction as a whole. There seems however to be very little knowledge of the specific way in which these conditions affect the physiological aspects of fecundation.

It can readily be understood that it is an extremely difficult matter to establish phenomena common to so physiologically complex a *milieu* as a forest stand. Here there is only to be seen the resultant of the play of factors without always having the possibility of tracing their specific causes. Hence a knowledge of the individual behaviour of particular types of trees in face of external phenomena recurring at most frequent and regular intervals in the same environmental conditions may aid materially in promoting a general knowledge of the particular question. For example it may have been observed that, in the case of certain trees, growing in a stand of average density, if a certain amount of light is favourable to their height and volume development, a like proportion

of light is injurious for the same trees during the flowering and fecundation period, the result being a number of parthenocarpic fruits.

It is therefore a fortunate circumstance that in almost all countries studies in genetics have to-day reached a high stage of perfection. It is to be hoped that before long it will be found possible to isolate and identify the phenomena which influence fecundation, so that the seed collector may have safe guidance in his work.

Mr. C. G. BATES (United States) has made a study of the growth conditions of a number of seed producers of *Pinus resinosa* Ait., with the object of ascertaining the relation which obtains between the sizes and other external characteristics of the mother trees and the quality of the seeds and seedlings which they produce. The result of his experiments has been to show that in the case of *Pinus resinosa* and in the conditions obtaining for the specimens examined, the law of harmony between the external characteristics of the trees and the quality of their seeds is by no means established and even, assuming a purely genetic standpoint, this law would appear inverted. Strong and flourishing specimens where the transmission of type characteristics is concerned, seem to produce the weaker subjects, while the contrary is the case with specimens of moderate height and average or under average vegetative capacity. These conclusions, being limited to a single variety and to a particular area, have raised a certain amount of discussion and criticism and further control is recommended before the results are accepted as definitive, though it should be stated that experiments made elsewhere and for other trees, e. g., *Betula lenta* and *Liriodendron tulipifera*, have confirmed Mr. BATES' results.

It has also been generally considered for some time past that the fruits which grow in certain parts of the crowns are the better. In this connection Messrs PEARY and COOVER of the United States have made tests with *Pinus echinata*, *Pinus rigida*, *Liriodendron tulipifera* and *Fraxinus americana*, studying cones and cone fruits taken from seed trees at top, middle and base of the crown. Their work has shown that no hard and fast rule can be laid down either for the different seed, bearing trees of the same species examined nor for all the various species taken as a whole. The cones from the top of the crown of the specimens of *P. echinata* generally contained excellent seeds, the contrary was the case for *P. rigida* and so on. One thing has however been proved by these trials, the best seeds were usually to be found in early maturing cone fruits and that quite independently of the part of the crown from which they were taken. It may be asked whether this fact throws any light on the secret of perfect ripening. The writers do not consider themselves justified at present in drawing any definitive conclusions and recommend a continuance of the local experiment method. The seeds produced by trees considered as good seed trees should be carefully tested and close count kept of cases of parthenocarpia occurring in relation to the meteorological conditions of the season. Good seed trees should be marked in some way so that they may be readily recognisable in the future and utilised to the best advantage. In this way silviculture will enjoy the advantage of a fundamental rule in genetics, viz., the determination and protection of good parent stock.

Attempts have also been made to estimate the quality of the seeds by considering the size of the cones which contain them, but here also it is difficult to lay down any very definite rules. Messrs. H. G. CHAMPION and B. D. PANT of the Forest Research Institute at Dehra Dun, British India, have carried out important research work on the subject of the regeneration of *Pinus longifolia* Roxb. and have also at the same time dealt with the origin and size of the cones. Their observations have been made on seed trees isolated or dominant or becoming dominant after regeneration fellings. The result of the experiments shows that the size of the cones is affected by the diameter and age of the parent, but that in any event the number and size of the seeds is not always completely correlated with the greater size of the cones. It appeared however to be a generally constant rule that the quality of the seeds depends on their specific weight and that in general this weight increases up to a certain point with the size of the cones. Hence every factor that affects the development of the cones also affects the weight of the seeds. Heavy tapping for example tends to reduce the size of the cones and they contain lighter seeds also. The work of Messrs CHAMPION and PANT links up also with that of Mr. BATES, for among their various conclusions it is stated that the quality of the seeds supplied by cones of equal dimensions was the same, quite apart from the growth conditions and the age at which the seed trees reached the stage of isolation.

These brief quotations demonstrate how much the question of a good choice of seed trees requires further experimental study; in the meantime the present trend in such studies is seen to be on lines sound enough to justify their continuance. There seems certainly no reason for not admitting that healthy trees, showing all the characteristics of the species but with only average or even reduced capacity of vegetation, may rightly be the less sensitive to external phenomena during the reproduction period. In regard to the phenomenon of fecundation the important element is the continuity in the development of the physiological processes connected therewith and every factor that is capable of assisting in the maintenance of such continuity should be very carefully determined.

#### SEED PRESERVATION.

Striking technical progress has been made in recent years in regard to forest seed preservation. Increasing care is being exercised to discover methods of preservation which will be successful in maintaining viability during prolonged periods, since it is worth while to make good occasional instances of shortcomings in fecundation and the chances of periodicity, now that the use of seeds for re-afforestation and the artificial regeneration of stands is on the increase.

The general method adopted in seed preservation consists in a rapid bringing of the majority of the seeds to be preserved into the state of complete embryonic dormancy. This condition is not only particularly favourable to the maintenance of viability in the seeds in storage but it is also helpful in preventing retarded or sporadic germination of which nursery men rightly complain.

In the latter connection it has long been observed that acorns and beech-mast to be found in forest litter and protected solely by the crown canopy, practically

all germinate simultaneously, when once the right season comes, whereas stored seed shows retarded or intermittent germination. These results were as a rule ascribed to the condition in which the seed becomes piled up in the heap and to the difficulties of maintaining a constant degree of humidity at various levels. It was also thought that intermittent germination had some relation to the various stages of maturation in the seeds. Trials made in north Idaho (U. S. A.) by the Northern Rocky Mountain Forest Experiment Station seem to confirm the latter view. The observers, who had traversed the primitive forests of *Pinus monticola* in Idaho, had noted that large masses of forest seeds in an excellent state of preservation were to be found under the close shelter of these age-old forests. The Experiment Station took advantage of the opportunity to make a study of the question of seed preservation in natural conditions, and after observations lasting for a number of years the following conclusion was reached: each fruiting gives two main kinds of serviceable seed : (1) seeds which, while still attached to the tree have already entered into a stage of complete embryonic dormancy; (2) those which reach the soil in a condition of incomplete dormancy. The latter group, which are in the proportion of about  $33 \frac{1}{3} \%$  for each fruiting, could hardly be distinguished by outward appearance from those in the first group, but in the second year at the favourable season, they began to germinate and produced vigorous and healthy plants which however soon perished, although all the conditions for their development were quite favourable.

The seeds that were in a complete state of embryonic dormancy remained in a perfect state of preservation for several years, where conditions of temperature and humidity dependent on the canopy of the great trees remained constant or almost so, and proved themselves particularly resistant to the effects of variations of temperature and of great heat. It has been ascertained that large areas in the primeval forests of Idaho, which had been destroyed by fire, had easily been regenerated, owing to the fact that the large reserve stock of seeds had withstood the intense heat given off by the fire. On the other hand, it must be admitted that in forests under management schemes, by reason of many adverse circumstances, fruitings are bound to be less regular and satisfactory than in virgin forests, so that the number of seeds, at each fruiting period, which leave the tree before having reached the stage of maturity, corresponding to the state of complete dormancy, cannot but be higher. Hence the percentages of cases of germination resulting from the examination of seeds in the testing sieve must be considered as of doubtful value. It has therefore been recommended by good authorities that the method of testing by the sieve alone should be given up and that it should be supplemented by sectional tests. It is further recommended that seeds should be classified for purposes of preservation according to their size, as large, average and small, for homogeneous heaps maintain more readily constant temperature and humidity ratios. In addition the homogeneous heaps would facilitate the application of preservative and stimulating treatment for maintaining viability with the best chances of success.

Seed testing by cutting sections should be made immediately after the extraction of the seeds from the fruit and should be repeated before storing. Excessive shocks or pressure during the extraction process may produce im-

portant changes within the seeds and modify the distribution of the oils and fats and even partially detach the kernel and its integument. These changes may be purely temporary in character but in any event it would be well to be sure of this fact.

The temperature at which the seeds are extracted is of importance from a double aspect and exercises considerable influence on conservation. During extraction temperature can act either through its intensity or duration. In connection with the period for which seeds should be exposed even to quite moderate temperatures, care must be exercised to avoid reducing humidity below certain limits. These limits are quite low but at the same time, admitting that thorough drying of the seeds is a valuable protection against the risk of premature fermentation, the minimum limits required to maintain the embryo in viable condition should never be closely approached. A number of experimenters, including SCHROEDER, NOBBE, KROOKER and HARRINGTON, have shown that regular germination can take place with a 1 % moisture content in the seeds and WAGGONER has found that the phenomenon occurs with seeds dried down to 0.4 %. EVERT however suggests that in practice it is prudent to leave the seeds with at least 5 to 8 % of their moisture.

The resistance of seeds to relatively high temperatures depends rather on its intensity than the length of exposure. The moisture factor which is considered important in increasing the capacity of seeds to stand heat, depends upon the histological character of the shell. Mr. E. WRIGHT (U. S. A.) has made a special study of this question for several varieties of pines and a certain number of broad-leaved trees in the California Sierra Nevada. He found that *Pinus ponderosa* showed good resistance to long exposure (4 hours) to moderate heat (104° F.) when the moisture content was reduced to 3.82 %, whereas, if exposed for only 5 minutes to a temperature of 212° F. germination was reduced to 24 %, even with a higher percentage of moisture. As the result of a number of trials, the writer comes to the conclusion that the biochemical aspects of the phenomena produced within the seeds by temperature is of greater importance than the factor of moisture. Heat acting on the colloidal material in the cells as a rule stimulates enzymatic activity. The hardness or thickness of the seed-coat may have some influence on heat resistance, but as a rule the highest temperature tolerated by the various seeds would improve the permeability of the seed coat and facilitate the emergence of the embryo on all favourable occasions. Regarding the question of prolongation of viability through a prolonged exposure of seeds to relatively high temperatures, it was Mr. WRIGHT's experience that seeds so exposed and afterwards left dormant for a long period, received a fresh extension of viability, if again submitted to similar or even higher temperatures. Among the trees tested, the seed of *Pinus ponderosa* and *P. contorta* endured moderately high temperatures and temperatures below 180° F. decidedly raised germination percentage in *Abies magnifica*. Seeds of *Rhus laurina* remained resistant at the highest temperatures of all and withstood a five minute's exposure up to 240° F. In practice the preservation of seeds at moderate temperatures would result in a fairly accurate knowledge of the temperature best suited for each variety of seed.

Mr. W. CROOKER (U. S. A.) has obtained excellent results with birch seeds kept at an average temperature of about 40 F. These seeds were mixed with moist powdered peat.

Experiments have also been made with seeds of *Pinus echinata*, *P. palustris*, *P. caribaea*, *P. taeda* and *P. contorta*, mixing with them moistened peat powder enclosed in soft paper containers.

All the seed heaps were originally brought to freezing point and gradually the temperature was raised to 40° and then to 50° and was kept constant at this point. Four months later all the seeds so treated made rapid and uniform germination, except in the cases of *Pinus palustris* and *P. contorta*.

The use of peat is considered to have been particularly helpful. It retains ten times more moisture than sand or soil and is free from infective germs, furthermore the moisture content can be kept uniform if desired. Constancy in the temperature in the different layers will always be an important factor in the preservation of seed at temperatures which do not differ materially from that of the outer air.

Low temperature preservation of seeds is a subject which has always been of interest to scientists. Mr. W. KINZEL's observations of seeds from high mountain lands have shown that, in the majority of cases, these seeds when brought down to the plain do not begin to germinate until after chilling at a temperature of about freezing point and after full exposure to the light. The same authority has also made experiments on the effect on seed germination of alternative exposures to light and darkness, low temperatures being constantly maintained. Where in the experiment the seed showed progressive loss of viability, a further test was made by cutting and it was found that in several instances, a second state of embryonic dormancy had supervened. Germination was obtained by giving alternating treatment with light and darkness and heavy chilling. The cases of second dormancy often occurred even with scientifically preserved seed, after prolonged periods.

Many experiments in connection with seed preservation have been made at temperatures in the neighbourhood of the freezing point which have shown that, speaking generally, such temperatures are very favourable for the purpose in the majority of cases. The real difficulty here consists in finding the right moisture content in the different rows, as different kinds of seed or groups of seeds have their own particular requirements. This is a point that requires further investigation and it is closely connected with the question of the protection of the embryo when the seed is at a very low temperature.

As seeds are given series of exposures at high rates of temperature, it would seem that a series of exposures at low temperatures should have in most cases hastened germination.

The great development at the present time of the industrial uses of cold storage has made available practically everywhere the necessary plant and it is therefore to be hoped that further experimental work will be carried out on the subject.

Such work should so far as possible be under the direction of research institutions and the results, after proper control and unification of data, should be made known widely in silvicultural circles.

The fundamental principles now generally adopted in seed preservation may be summarized under the following headings :—

- (1) In the first place a strict check on the quality of the seed to be preserved should be carried out ;
- (2) The seeds should be dried up to the optima percentage levels of temperature (for each tree or group of trees) so as to avoid premature fermentations or similar reactions within the seeds ;
- (3) The seeds should be disinfected as a measure of protection against cryptogamic infection ;
- (4) The seeds should be spread in compartments or receptacles, well isolated from external contacts, where a practically constant temperature and moisture content can be maintained ;
- (5) Sterilised isolating material should be used for maintaining the right degree of moisture content in the various layers ;
- (6) At the outset the seeds should be treated at fairly high or low rates of temperature, while subsequent treatment should be at fixed rates of temperature suitable for preservation for extended periods.

#### METHODS ADAPTED FOR ACCELERATING OR REGULATING GERMINATION.

As has been shown, ordinary methods of seed preservation have very little influence on the regulation of the complete state of dormancy of the embryo within the preserved seeds. The conditions of particular or of intermittent germination give rise to considerable difficulties as regards the homogeneity of the young shoots. Furthermore as a result of this retardation a varying number of seeds are lost which, though quite viable, still remain inert in the soil at the time of pricking out.

Treatment by cold or by heat has, as has already been said, given good results in getting over these difficulties. There are however certain kinds of seeds that are particularly liable during the process of preservation to various effects, which greatly retard their germination capacity. For example lime, ash, locust-tree, carob-tree, many varieties of oak and birch are well known to foresters on this account. Experience however also shows that many seeds of forest trees are also much retarded because of faulty preservation methods.

The cause is to be looked for in the proportion of sterile seeds to be found in the preserved seeds and in the structure of the seed cover in different cases.

Mr. KORSTIAN noted that the membrane of the cotyledons of acorns absorbs water very readily while the outer cover of the acorns themselves is hard and very little absorbent. To speed up germination and make it uniform, it is necessary to reduce this hardness or, alternatively, if possible to remove the cover from the acorn before planting. Prolongation of storage causes the amount of fatty matter within several kinds of acorns to diminish materially and the fat residue is of a special quality, requiring long periods of burial in the soil and a consider-

able degree of heat continuously applied in order that it may be transformed into soluble carbo-hydrates. In order to accelerate such transformation the acorns may be steeped in a weak solution (2-3 %) of sulpho-cyanate of potassium or exposed to ethylene chlorohydrin vapour for considerable periods.

Experiments conducted by the Osborn Botanical Laboratory of Yale University have shown that black oak (*Quercus vellutina*) and red oak (*Quercus borealis*) acorns, steeped in a thio-urea solution for 15 minutes, germinated quite satisfactorily quickly and uniformly. Exposure of the acorns to ethylene chlorohydrin vapour for 24-48 hours also gave good results in hastening germination. In general however these experiments led to the conclusion that thio-urea treatments were more promising than ethylene chlorohydrin treatments in shortening the rest periods of acorns of the black oak group.

For seeds with a hard coat, such as those of the locust tree, prolonged immersion in hot water has been found effective, as also sulphuric acid treatment and scarification. It has however been observed that the quality of the seed coat is not the same with seeds coming from different countries. Mr. L. BURTON has shown that locust tree seeds of Austrian origin require different treatment from Idaho seeds of the same kind. On account of the difference in hardness of the respective seed coats, the best treatment for Idaho seeds appears to be scarifying, while Austrian seed germination can apparently best be stimulated by hot water treatment.

*Tilia* seeds, which are generally kept and sown with their pericarp, are well known to give very sluggish and incomplete germination. The presence of the pericarp is surely the principal cause of this phenomenon. Mr. G. NELSON SPAETH, who has paid special attention to this question has ascertained that the sutures of the sections of the pericarp are particularly strong and that they can only be broken down by prolonged steepings or by treatment with nitric acid, which fortunately does not damage the seed testa. When the seeds are once separated from the pericarps, they should be scarified or treated with sulphuric acid or with thio-urea. In the acid treatment, the process must be carefully watched, especially as regards the reaction temperature, which can be regulated by adding water and by refreshing the seeds after treatment with prolonged washings. The preservation of isolated *Tilia* seeds at low temperatures is favourable to complete maturation.

The problems relating to regularity in germination and to the acceleration of particularly sluggish germination have to-day been clearly stated. There has however as yet been insufficient experimental work in this field, and without careful and prolonged experiment a number of theoretical and well founded principles cannot be put into practice. But the future may be viewed with confidence; there are too many interests concerned to-day with the reconstruction and protection of the forest wealth already existing, as well as in the plantation of new forests in places where they are particularly necessary. Scientific method in the collection and in the preservation of seeds is of fundamental importance in this work of such high general utility.



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## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

TORNADOES IN THE UNITED STATES DURING 1932. — In this *Bulletin* for October 1932 (p. 383) some figures were reproduced from the *Monthly Weather Review* concerning the number of tornadoes in the United States and the damage they caused in 1931. We are now summarising the preliminary figures (dated 28 January 1933) given in the same periodical (Washington, 1932, Vol. 60, No 12, p. 253) relating to the tornadoes during 1932. The following are the main facts.

There were 125 tornadoes during the year, which caused 391 deaths and damage valued at about 7 million dollars. From March to July inclusive the hurricanes were most frequent and caused most deaths and damage.

To these already sufficiently alarming figures must be added those of the violent winds of tornado force many of which will possibly be classed as tornadoes in the final statistics, viz., number of storms = 19, number of deaths = 7, and value of damage = 85,000 dollars.

A comparison of these figures with those for 1931 shows that in 1932 the number of tornadoes was half as high again (125 as compared with 84), the number of deaths more than ten times higher (391 as compared with 34) and the value of damage more than four times as great (7 005 000 as compared with 1 826 000 dollars).

On the other hand, in certain previous years tornadoes have caused a number of deaths greatly exceeding the 391 of 1932, notably in 1927 (540 deaths) and in 1925 (794 deaths).

HYDROGEN ION CONCENTRATION OF RAIN WATER AT STRASBURG, FRANCE. — M. A. RIEGERT made 25 determinations of the pH of rain water at Strasburg-Lingolsheim between March and November 1930. He found values varying from 5.2 to 5.8, that is to say, a difference of 0.6, without apparent influence by the season, and the average was 5.5, which corresponds to an acid reaction.

(*La Météorologie*, Paris, 1932, Nos. 92-93 pp. 447-448).

T. B.

### Soil Science.

LIMITS TO THE USE OF THE NEUBAUER METHOD OF ANALYSIS. — In *Das Superphosphat* (Berlin 1932, Nr. 8, p. 217-227, 5 fig.) Dr. A. HOCK (Weihenstephan) gives some interesting observations on this subject.

The NEUBAUER method, as is well known, determines the available  $P_2O_5$  and  $K_2O$  in a soil by analysing rye seedlings grown on the soil. It would however at first sight appear very probable that certain soils may exercise an injurious or even deadly effect on the seedlings and so make the application of this method of no avail. In fact, soil reaction plays a decisive role in this regard, at the extremes of acidity and alkalinity. In normal conditions however the seedlings are not affected by the soil reaction, which is usually between  $pH = 4$  (acid) and  $pH = 8$  (alkaline).

In very acid soils (humus, peat) the NEUBAUER method is not applicable because the roots of the seedlings are not able to develop. This frequently occurs, specially in sphagnum highmoor. The writer illustrates 2 seedlings grown on such a soil, showing that when the roots began to penetrate the acid soil they immediately turned black at the tips and ceased development.

Even if not too acid, humus and peat soils are not easily tested with the NEUBAUER method because of their loose and porous texture in which the seedlings cannot form the normal network of roots but only attenuated filaments incapable of completely exhausting the soil as do roots developing in a mineral soil and forming a close network. Two figures show this striking difference between the two root systems.

At first however the soils in question appear to favour the rye seedlings, which develop more vigorous shoots than those on mineral soils and are deeper in colour, denoting a greater nitrogen assimilation. This difference in appearance is even sufficient to distinguish at a glance the seedlings on peat or humus soils from those on mineral soils. But this luxuriant growth is only deceptive. If the NEUBAUER method is applied on such soils, a marked nitrogen effect is found, it is true, but no other useful effect, as the roots are greatly inhibited in growth.

Similar inhibitory influences at first in their effects, may be exercised also by soils diametrically opposed to the preceding, namely by those having a strongly alkaline reaction or a too high concentration of salt, or both of these defects, such as the "black alkalis" of Hungary, for instance. In the latter soils (in which the dark colour is due to the presence of sodium carbonate, having an alkaline reaction) the seedling roots

are also blackened and their growth completely checked. This pathological state is also well represented in a figure.

In this case, as goes without saying, there is no question of a normal absorption of nutritive elements by the seedlings. To demonstrate this clearly the writer mixed the black alkaline experimental soil with a 1 % citric acid solution and then added the quantity of  $P_2O_5$  supposed to be absorbable by the roots. He found 274 mg of this phosphoric acid per kg of soil, an amount which exceeds by 24 mg the limit-dose of 250 mg above which a phosphatic fertiliser would not be required, and shows thus that the black alkaline soil may do without this fertiliser, a fact which the NEUBAUER method was not able to prove.

SOIL BACTERIA CAPABLE OF ASSIMILATING NITRATES. — It is known that the addition of straw, maize stalks or other plant waste with a high carbon-nitrogen ratio to soil usually has the effect of reducing the content of the soil in nitric nitrogen, because it enables certain microorganisms to assimilate the nitrates.

Since nitrates are thus removed from the higher plants on the land the phenomenon may be of great practical importance, for if it occurs to any large extent it may seriously affect certain crops. The conditions favouring the assimilation of nitrates by soil micro-organisms have been studied to some extent but there has been no complete study of the organisms having this capacity.

This gap has recently been filled by two American scientists, P. E. BROWN and F. S. SMITH. They isolated from soils in which this assimilation was taking place species belonging to the genera *Azotobacter*, *Aerobacillus*, *Pseudomonas* and *Achromobacter*, and then grew them in pure culture and found that all these microorganisms are capable of assimilating nitrates.

(*Journal of the American Society of Agronomy*, Geneva N. Y., 1932, Vol. 24, No. 9, p. 749-754).

T. B.

### Fertilisers and Fertilising.

IMPORTANCE OF SULPHATES AS FERTILISER. — MM. Gabriel BERTRAND and L. SILBERSTEIN have published an interesting note on this subject in the *Comptes rendus de l'Académie des Sciences* (Paris 1932, tome 195, No. 26, p. 1349-1352), which is summarised below.

In laboratory experiments of culture in artificial media it is not possible to obtain good results without adding to the media a certain quantity of sulphur combined in an available form, e. g., as sodium or calcium sulphate. But does the same apply in farm practice? Many agronomists reply that they do not even consider it necessary to supply sulphate-containing fertiliser.

As early as 1927 M. Gabriel BERTRAND showed the risk that this opinion might entail in farming, particularly with intensive cultivation. Since that time the discussion has been based on facts. The research carried out by this scientist and his co-worker employing more accurate methods than had been previously used, enabled them to establish that plants require for their construction much larger quantities of sulphur than had been supposed and that often they cannot find sufficient in cultivated soils, which are sometimes very poor in available sulphur (less than a few decigrammes per kilogramme).

Once these facts were established it was logical to admit that sulphur added as a soluble sulphate to a soil deficient in S should have the beneficial effect of a fertiliser. But in view of the general opinion mentioned above the writers thought it necessary to obtain experimental proof of their assertion.

For the experiment they procured a clay soil poor in sulphur, that is to say, containing only 0.114 gm of S per kg and over 0.056 gm of barium which, when in the form of sulphate, may paralyse 0.013 gm of sulphur.

Rape was grown in 3 series of 3 pots containing respectively: 1st series: the unsupplemented soil (control); 2nd series: soil supplemented with barium nitrate to transform all the sulphur present into  $\text{BaSO}_4$ ; 3rd series: soil supplemented with a little sodium sulphate. The soils of all three series were thoroughly mixed with potassium phosphate and sodium nitrate in dilute solutions supplying phosphorus, nitric nitrogen and potassium in proportions such that all contained equal quantities of these elements.

The necessary precautions were taken to avoid sulphur being added in the distilled water used or by rain.

The rape was sown on 23 April and the ripe fruits were harvested at the end of August. The results were very striking. From the beginning of July the appearance and size of the plants differed from one series to another: on the soil supplied with sulphate the rape plants had an average length of 42 cm and already bore a number of fruits; on the control soil, on the other hand, the plants measured on an average only 18 cm (less than half the height of the others) and were only beginning to form fruits; the plants on the soil in which the sulphur had been paralysed by barium had as yet no flowers and their average size did not exceed  $\frac{1}{5}$  of that of the plants receiving sulphate.

The following table summarises the results obtained :—

SERIES	Total crop (dry matter)	Crop of seeds (dry matter)	Crop of seeds compared with that of control 100
(1) Soil without addition (control) . . . .	26.06 g	7.82 g	100.0
(2) Soil plus barium nitrate. . . . .	24.82	5.25	59.7
(3) Soil plus sodium sulphate . . . . .	47.15	13.44	183.3

The rape grown in the soil with sulphate has thus produced 83.3 % more seed than that on the control soil; the increase in yield reached as much as 207 % when compared with that on the soil with sulphur paralysed with barium.

The insufficient content of the experimental soil in available sulphur has therefore clearly limited the action of the other fertilising elements, particularly of the N, P and  $\text{K}_2\text{O}$  added as basic fertiliser.

Thus from the standpoint of practical manuring the writers emphasise that now that the fertiliser industry tends increasingly to produce concentrated fertilisers such as urea, or mixtures in which nitric acid and phosphoric acid are combined with ammonia and potash, it is necessary in intensive cultivation to add to the concentrated but incomplete fertilisers a certain proportion of sulphates of ammonium or potash or even of lime.

But, it may be added, this precaution is not necessary wherever large quantities of sulphate fertilisers are still used, such as sulphates of ammonium, lime, magnesium, potassium, kainit, superphosphates, etc. Moreover, rape being a Crucifer containing compounds in the form of sulphides, requires more sulphur than many other cultivated plants, so that the experiment would be of greater importance if carried out with other plants, using also other soils. It may also be possible that experiments in the field might give results different from those of pot experiments.

## Crops of Temperate Regions.

CHARACTERISTIC IMPURITIES OF RUSSIAN LUCERNE SEED (S. Louis FRANCOIS, *Journal d'Agriculture pratique*, 4 février 1933).—The lucernes coming from the southern and eastern regions of Russia are typified by the so-called "Turkestan lucerne", which is only a variety of the ordinary lucerne adapted to the continental climate of Central Asia. The external characteristics of the seed and of the vegetative part of the plant do not allow of a distinction between this and the French lucernes. There are vague differences in the seed taken in the mass, such as a slight roughness in appearance. The Turkestan lucernes always however contain characteristic impurities, specially the fruits of *Acroptilon Picris*, a Composite plant resembling *Centaurea*, so that it is sometimes called *Centaurea Picris*. The seeds of *Acroptilon Picris* are very easily recognised: they are dull white akenes, of 2.5 to 3 mm, with slightly flattened sides and more or less visible parallel markings. The upper extremity which is larger than the other has a slight conical protuberance, while there is a slight depression in the lower part of the akene. There are also met with somewhat frequently among the seed of Russian lucernes, the seed of borage (*Echinospermum Lappula*), which has greyish akenes narrowing to a point at the top, wider at the base, and having on the outer side a border of two rows of hooked spines. But the most characteristic element of Russian lucernes is the seed of *Acroptilon Picris*.

D. K.

FACTORS INFLUENCING COLD RESISTANCE IN LUCERNE (*Journal of Agricultural Research*, H. M. TYSDAL, 15 March, Washington 1933).—The writer studied the influence of light, temperature and soil moisture on the ability of different lucernes to survive cold. Lucerne plants of the Turkestan, Grinum and Arezona common varieties were used in the investigation. The main results were the following:—

Length of day was found to have a very important influence on the hardening process. The hardier varieties responded markedly to a short day length. Intensity of light was also found to be an important factor in the process. The short day at both medium and high temperatures greatly reduced growth. Plants hardened under white light were better able to withstand cold than those hardened under red or blue light.

The resistance of plants to freezing varied with the temperature at which they were hardened. Alternating temperatures during the hardening process markedly increased cold resistance. Plants subjected to zero temperatures for 16 hours and then placed in a warm greenhouse at 20° C. during the day for 8 hours developed much greater hardiness than those kept continuously at 0° C.

Reducing the soil moisture as low as the incipient wilting point did not markedly harden any of the 3 varieties. The plants in the soil containing the highest percentage of moisture invariably gave the highest percentage of survival when frozen for the same length of time.

D. K.

HOME MADE FLOWER POTS.—It may be of interest to outline briefly the method and advantages of the process for making pots described in the *Revue horticole suisse* (Châtelaine-Geneva, 1933, No. 1, p. 8).

*Technique.*—The raw material (which remains raw) is whole soil, leaf mould or even turf, and may be mixed with decomposed farmyard manure or other manure. The soil to be used must be slightly moist; it is put in small amounts into a cup,

then a mould attached to a hand lever is placed in the cup and firmly pressed home by the lever. Then by means of a foot lever the pot is removed from the mould and is then put to dry in an airy shelter.

There are now on the market several appliances for making such pots, those more particularly described and illustrated in the article in question being produced by Messrs. HAUBENSAK (Bâle, Switzerland). The diameter of the pots may be varied from 54 to 103 mm by changing the mould.

*Advantages.* — (1) For plants for decorative purposes it avoids the necessity of re-potting when the plants are to be put in position and so prevents any check to growth. (2) This means that plants thus grown may be 8 to 15 days ahead of those grown in terracotta pots and re-potted, as has been shown by tests by several horticulturists.

This process would seem to have distinct possibilities at a time when growers must cut down on costs. Market gardeners are using the pots on a large scale for growing tomatoes, melons, eggplants, etc.

COLOURING OF APPLES AFTER GATHERING (*Journal of the Ministry of Agriculture*, H. GOUDE, London 1933, Vol. 39, No. 10). — Colour in dessert apples is considered by growers to improve the commercial value of the fruit. For many years at the Burlingham Horticultural Station a method has been practised of improving the colour of apples after they are picked by exposing them in trays to sunlight and weather for a period of about 10 days. As the fruits receive any available sunshine and also night dews the process is called "Sun-Dewing". If it is desired to colour the under-side of the fruit, they are turned in order to face up to the light the uncoloured part of the apple. The fruits react more quickly to the treatment if they are set out in trays immediately after picking. If they are stored it takes a longer period for the fruit to develop the desired colour. The method requires no expensive apparatus. Potato trays are lined with a layer of wood wool or clean moss to hold the moisture. The green fruits are then packed, with eyes upward, on the trays, which are then placed on the roof of a shed facing south, and are covered with fish netting to protect the fruits from birds. The fruits and trays are thoroughly wetted with clean, soft water. It is necessary to maintain a moist atmosphere around the trays to prevent evaporation and shrivelling. Watering was found necessary at the Station every 3 days. At the end of the 10 days and nights the fruits were coloured and firm. If any frost occurs it is washed off the fruits with clean water before the sun's rays reach the trays. The "sun-dewed" fruits keep longer than those stored straight from the trees and the flesh quality is improved.

Apples with a greasy skin do not respond to the process. The colour and skin texture of commercial varieties of pears have also been improved by "sun-dewing".

D. K.

DYING-OFF OF LAVANDER (*Bulletin-Journal de la Société des Agriculteurs de la Drôme*, J. BORDAS, May 1933). — The writer studied the various centres of lavender production in France (Drôme, Vaucluse, Bouches-du-Rhône, Var) and reached the following conclusions:—

(1) *Soil factor.* — The true lavender (*Lavandula vera* D. C.) thrives only in certain soils, viz., in permeable and not too dry silico-calcareous soils, which shows the importance of a study of the physical environment.

(2) *Climatic conditions.* — Lavander requires the Mediterranean climate, but grows only at a given height and exposure (400 to 1000 metres and with a north aspect).

(3) *Species factor*. — The true lavender has not the same requirements as *Lavandula vera* var. *fragens* L. *Spica* or as *Lavandula Spica* Loisel. Certain precautions are required, notably, planting of well-rooted vigorous plants, using a plough instead of a dibble for planting to prevent ramming and asphyxiation of the roots, and clearing of the crowns of the young plants. Fungi do not seem to play an important part unless the plants are already enfeebled.

D. K.

## Tropical and Sub-Tropical Crops.

ROOT DEVELOPMENT STUDIES ON VARIOUS PLANTS IN THE TROPICS. — The biology of the roots of forest trees and trees cultivated on a large scale (coffee, hevea, tea, cacao, etc.) of the tropics is practically unknown. The exhaustive study of these problems carried out by Dr. Ch. COSTER, forest official in Java, over a period of several years is therefore very welcome. The work was started as a result of the inadequate growth observed in certain of the numerous teak (*Tectona grandis*) forests in Java but the study has not been limited to this species. The figures given refer to a hundred different plants, including forest trees, cultivated trees, green manure plants and various herbaceous plants. The work is divided under four headings :—

- (1) Development of the roots of young plants belonging to 70 species of trees and green manure plants.
- (2) Roots of older plants.
- (3) Oxygen requirements of roots.
- (4) Root competition.

Only the first 3 of these chapters have as yet appeared.

(1) The methods used were the following. The seeds of various trees were sown in a nursery plantation. Later they were planted out in the experimental field. After 6 months they were lifted with the most scrupulous care to keep as intact as possible even the finest fibrous roots. After the uprooted plants had been photographed, the fresh and dry weights of the aerial and underground parts and the length of the trunk and main roots were determined. The soil of the experimental field being very uniform and of excellent physical quality, the various species of trees may be satisfactorily compared.

The most surprising facts are the much more rapid growth of the roots than in trees of temperate climates and the great extent of the root system after a short time. The following are some of the figures :— after 6 months the length of the tap root varies from 0 to 438 cm., with an average of 170 cm., corresponding to an average gain of 9.3 mm. per day, and a maximum of 23.5 mm.

Three different types of roots are distinguishable :—

(a) A rapid growing tap root reaching a great depth and very well developed surface roots. A great number of shade trees and green manure plants are included in this class, such as : *Enterolobium Saman*, *Albizia falcata*, *Leucaena glauca*, *Indigofera galeoides*, *Tephrosia candida*, *Tephrosia maxima*, *Tephrosia Vogelii*, *Sesbania Sesban*, *Flemingia strobilifera*.

(b) Tap root quick growing but very few lateral roots ; aerial part of plant slow growing while young. In this class fall : *Acacia leucophloea*, *Tamarindus indica*, *Dalbergia latifolia* and *D. Sissoo*.

(c) Tap root very short or completely absent ; all the roots in a horizontal plain. Few species occur in this class. *Cassia leschenaultiana*, *C. pumila* and *Crotalaria juncea* may be mentioned.

These categories persist only during the early period of growth, up to six months. Later it may well happen that the root system behaves entirely differently. Thus many trees which in the first months developed a particularly strong tap root (type *b*) may later develop numerous lateral roots and so come to fall in category *a*.

Among the green manure plants the well known *Leucaena glauca* shows an excellent root development, which makes it possible to utilise it on new and relatively impermeable soils. The relationship between the dry weight of the roots and of the aerial parts varies considerably in different species, but is constant for different individuals of any one species. Further, the total length of lateral roots, the number of roots exceeding 1 m. and the length of the tap root are characteristic for a given species.

(2) The excavation of older trees offers greater difficulties. To give an idea of the total root development the writer uncovered first the surface roots and measured them. The whole was then diagrammatically sketched in outline. The deeper roots were then uncovered and drawn. By this means the writer obtained instructive diagrams showing the whole of the roots seen from above and in section.

The profound influence of the nature of the soil on root development was thus shown. In soils which are not easily permeable there occurs a preponderance of surface roots, the tap roots remaining short or being completely lacking. In very permeable sandy soils, on the other hand, the same species of trees show a root system which extends as much vertically as horizontally. But for different species characteristic genetic response to the nature of the soil may also be distinguished. Certain species, for example, such as the lamtoro (*Leucaena glauca*), in the first place, and also *Acacia villosa*, *Albizia falcata*, *Derris microphylla*, *Dalbergia latifolia*, *Bixa Orellana* and the tea plant, are in consequence of the nature of their root system able to reach the deeper strata of the soil in a minimum of time. Other species are judged to be less favourably placed in this regard as their surface rooting system is too extensive. These species therefore are unable to utilise the deeper strata and are a danger to the neighbouring trees owing to root competition.

The root systems of grafted trees and cuttings were also studied. It is well known that cuttings lack a tap root, whereas the grafted plant has one. At an advanced age this difference between grafted plants and cuttings disappears, for the latter develop a secondary deep rooting system. But in certain cases very striking differences may be distinguished also in old plantations. The writer observed, for instance, in a plantation of *Citrus nobilis*, plants grown from cuttings in which the roots reached a depth of only 25 cm. whereas the roots of a grafted plant of the same age reached a depth of 6 metres.

The periodicity in root development has been studied only incidentally in tropical countries. The writer adds certain observations to the known facts. As regards the roots of teak he finds that there exists no period of rest corresponding to that of the aerial parts. The development of fibrous roots depends entirely on the aeration and moisture content of the soil.

(3) To determine the resistance of various plants to a lack of oxygen in the soil, the writer undertook the following experiments. Pots containing plants 8 weeks old and with a height of 25 to 30 cm were immersed in a basin of water from which all trace of oxygen had been removed. For this purpose 0.4 gm of ferrous sulphate ( $\text{FeSO}_4 + 7\text{H}_2\text{O}$ ) were added per litre of water, a treatment which had no harmful effect on the plants. The surface of the water was then covered with a layer of paraffin. The time was then measured from the beginning of the experiment to the death of the plants from lack of oxygen to the roots.

A hundred species of plants were examined and it was found that different members of the same family may behave quite differently. Thus, in the Leguminosae, there are



bushes such as the various *Desmodium* species which survive only about ten days, whereas the rain tree (*Enterolobium Saman*) does not die until after about 180 days.

In general it was found that herbaceous plants offer the least resistance. Shrubs are more resistant and trees stand best the lack of oxygen in the soil. Further, it is of interest to find that among the trees, those with surface rooting systems, such as *Tectona grandis*, *Santalum album*, *Ochroma Lagopus* and *Melia Azedarach*, are the least resistant. Teak is of special interest in this regard. In India it has long been recognised that this valuable species requires very permeable soil. In Java, on the other hand, this has not been found to be the case. Among crop plants tobacco and maize are little able to stand a lack of oxygen. It was expected that rice would be found to be resistant, but this was not found to be the case; in the writer's experiment the rice plants died at the end of about thirty days. This is not as strange as it would appear, for irrigated fields contain much oxygen in the soil and in the irrigation water, which fact was not at first realised.

In conclusion, it would seem useful to draw the attention of foresters and agronomists to the writer's method for determining the oxygen requirement of various plants with short term experiments. The use of the process described may be of great value in the choice of suitable trees or crop plants for marshy soils.

(COSTER CH., *Sorte studien in de tropen* : I. De jeugdgdontwikkeling van het wortelstelsel van een zeventigtal boomen en groenbemesters. *Korte Mededeelingen van het Boschbouwproefstation*, Buitenzorg, 1932, No. 29, 46 pp., 12 figs.; also published in *Tectona*, Buitenzorg, 1932, deel XXV, afl 9 — II. Het wortelstelsel op ouderen leeftijd. — III. De zuurstofbehoefte van het wortelstelsel. *Ibid.*, 1933, No. 31, 95 pp., 20 figs.; also published in *Landbouw*, Buitenzorg, 1932, 8ste Jaarg., No. 6, pp. 369-464 (in Dutch with summary in German).

W. B.

BANANA GROWING IN MARTINIQUE. — About thirty varieties of bananas are grown in Martinique, but two only are utilised for export, namely, the 'Makanguia' and 'Figue naine'. The former, known on the market as 'Gros Michel', gives a fruit which is capable of withstanding long distance transport, but is unfortunately very susceptible to Panama disease and is very exacting as regards cultivation conditions. In Martinique it flourishes only on moist land rich in humus. The 'Figue naine', known also under the general name of "Canary banana", is represented by two sorts, differing in size: the 'Petite naine' and the 'Grande naine'. This variety is much more hardy and resistant to disease than the other, but as it does not stand transport well, specially designed boats are required for its exportation. Its yield is higher than that of the 'Makanguia' and its flavour is preferred by the European consumer. It is this variety therefore which must be grown in Martinique.

Banana plantations in Martinique are generally established on land which has fallen out of cultivation and been overgrown with a shrubby growth. After a superficial clearing the growers are content to dig holes for planting the trees. When the plantation is established the land between the rows is ploughed. In Martinique for the propagation of the banana the suckers growing at the foot of adult trees are used, care being taken to select those with thick bulbs and developing deep in the soil.

In the heavy soils of the centre of the island the soil has to be prepared with care to allow the roots to penetrate to the water level. On slopes the establishment of banana plantations requires special precautions to avoid erosion during winter. For this purpose belts of trees are formed at right angles to the slope and leguminous cover plants are grown.

The spacing depends on the soil and climate. For the Canary banana the most suitable distance is 3.5 m in each direction. For the 'Grande naine' in rich soil the spacing used is  $4 \times 4$  m. The best season for planting is May and June.

The management of the banana plantation is a much more delicate matter. Bananas require a well mellowed soil, rich in humus and in fertilising elements. It is very necessary to thin out the bunches. As regards tillage, it may be said that the pumiceous soils of the north need tillage only at long intervals, but that the heavy soils of the centre and south require at least one, if not two, ploughings a year (these are carried out at the beginning and end of the rainy season). Weeds are controlled by weeding and by growing cover plants or intercropping. As an associated crop many planters in Martinique use the 'choux caraïbes' (*Colocasia esculenta*), but it is better to grow leguminous plants which do not exhaust the soil. For porous and well watered soils a permanent cover of *Tephrosia candida* is recommended, spaced at  $1 \times 1$ . In the drier regions leguminous plants with a shorter life cycle, such as *Tephrosia Vogelii*, *Crotalaria usaramoensis*, *C. retusa*, etc., are advisable. It is also well to surround the plantations with a border of *Glycivridia maculata*.

The Martinique planters consider that manuring is necessary to obtain fine crops. Analyses effected at the Laboratory of the Agricultural Service show that a crop of 30,000 kg of bananas remove from the soil 33 kg of N, 16 kg of  $P_2O_5$  and 195 kg of  $K_2O$ . The planter must combat excess water by drainage; the drains must be closer together and deeper the heavier is the soil. In average soils the drains are spaced at 12 m apart.

The only serious pests of the banana in Martinique are the borers, or 'beetles' as they are more commonly called; there are two kinds of these borers, the large black cockchafer (*Tomarus bituberculatus*) and *Cosmopolites sordidus*.

Certain fungi cause very serious diseases. In the first place comes the redoubted Panama disease, caused by *Fusarium cubense*; this very rarely attacks the 'Grande naine' of Martinique. Root diseases, however, caused by fungi of the genera *Marasmius* and *Diplodia* and by eelworms are common. Young banana plants are also rather frequently attacked by *Thielaviopsis paradoxa*.

(M. D. KERVEGANT, *Bulletin Agricole de la Martinique*, Vol. II, No. 1, Port-de-France, October 1932).

J. L.

THE SEED OF *VOANDZEIA SURTERRANEA* THOU. — This interesting annual is a leguminous herb which originated in Africa but is cultivated only in the Dutch East Indies.

The fruits are ovoid globular pods with a very thin reticulated wall, containing 1 or 2 seeds which are dark red or more rarely white or black.

According to an analysis made by E. CASTAGNE the seeds contain 49.5 % of starch with all the characteristics of other leguminous starches, about 6.5 % of sugars (saccharose and stachyose), 7 % of oil and 24.5 % of total nitrogen.

(*Bulletin de l'Association des Chimistes de Sucrierie, de Distillerie et des Industries Agricoles*, Paris 1933, No. 1).

G. S.

## Agricultural Engineering.

EXPERIMENTS IN ELECTRIC PLOUGHING IN ITALY. — Under the auspices of the "Società Boracifera di Larderello" and of the "Società Toscana Esperimentazioni Elettro-agricole" M. G. GONDI has carried out experiments in electric ploughing

at Larderello in Tuscany on hillsides and in somewhat difficult climatic conditions (summer drought and too much rain in winter). The steep slope of the fields and their small area (often not more than 2 hectares) make the use of a tractor and the usual deep ploughing machinery impossible and uneconomic.

But electric power being readily available the experiments could be carried out. The engines then on the market were however not suitable for the conditions, being too heavy and very costly. For these reasons M. G. GONDI decided to build the necessary machines himself in the Company's works.

In 1929 he was successful in combining the first windlass with a second-hand 15 h. p. engine to which was connected a Guyot plough for ploughing up to a depth of 60-80 cm. The good results obtained convinced M. GONDI that for hillside work it was necessary to have a group of machines not weighing more than 15 to 20 quintals nor costing more than 15 000 to 20 000 liras, inclusive of the windlass, plough, cables, anchorage, etc.

The machines were intended for breaking up the ground and not only for ordinary ploughing; for normal depth ploughing the weight and cost of the machines should be very much less.

Since this time the group of machines has been in nearly continuous use. The manner of driving was found to have a considerable influence on the efficiency.

The satisfactory results given by this first group of electric windlasses and ploughs led M. GONDI to build a second group with improvements in accordance with the experience gained and with an engine of 20 h. p.

With these machines it was possible to plough to a depth of one metre, which shows that it is not necessary to use very high power motors, which are heavy and costly, for reaching depths of from 60 to 100 cm.

Both groups of machines are readily transportable even on uneven land and when industrially manufactured should not exceed a price of 8000 to 10 000 liras.

A single deep ploughing of the land would not be sufficient for the economic utilisation of the power of an electric agricultural plant, but, in addition to the farm operations (thrashing, etc.), normal ploughing by electricity is coming to be greatly used.

A third electric windlass has therefore been constructed at Larderello which is much smaller than the others (5 h. p. and weighing 4.5 quintals) and is particularly adapted for normal ploughing to a depth of 30 to 40 cm. This windlass is easy to use and is relatively cheap. It may be conveyed on an ordinary farm cart. With this small machine 2500 to 3000 square metres a day may be ploughed, with a consumption of 120 to 130 KW per hectare; it may also be easily used for harrowing, seeding, etc. with machines adapted for cable traction.

These encouraging experiments will be continued.

(G. GONDI, *Esperimenti di elettro-agricoltura a Larderello*, *Atti della R. Accademia dei Georgofili*, Firenze 1932, Anno 179<sup>o</sup>, Fasc. 3, p. 321-346).

H. J. H.

**ELECTRIC PLOUGHING IN ALGERIA.** — The possibilities of utilising electric power for tillage are now being studied in Algeria. In the *Vie agricole et rurale* for 9 April 1933, M. BASTET describes how, in addition to the large electric windlasses derived from the steam windlass, interest is increasing in the relatively light machines, for use particularly with electric power.

In 1931 the "Société d'Intérêt Collectif Agricole" of Mascara organised experiments at Thiersville in Algeria with windlasses of the Estrade type, which are considered light in Algeria, weighing about 4000 kg. The motors are 35 h. p. and usually give

up to 45 l. p. because of the system of using two windlasses, working alternately. Each windlass is provided also with a small 5 h. p. engine for purposes of transport.

The encouraging results obtained with an ordinary 3-share balance plough show that still lighter engines might be used for tillage.

H. J. H.

## Animal Husbandry.

### Feeding and Feedstuffs.

INFLUENCE OF THE PRINCIPAL MINERAL SALTS ON THE NUTRITIVE EXCHANGE AND STRUCTURE OF ANIMALS. — In a lecture delivered recently at the University of Berne Prof. U. DÜRST showed that in prehistoric times primitive man was not limited to the use of sodium chloride for the supply of the mineral salts which are so essential in nutrition, but utilised also other mineral compounds. With a view to an exact study of the numerical ratio existing between potassium and sodium in animal growth, the writer carried out a number of detailed experiments with pigs. The results showed that not only do mineral substances influence the circulation of the blood and lymph, but that their effects are appreciable on digestion, and on the metabolism of protein, fat and carbohydrate. It was also shown that the internal and external secretory glands and the reproductive organs are strongly affected by the presence in greater or lesser quantities of the mineral substances which form the energy basis of animal electricity. Their influence is apparent in all the reactions of the organic matter (alkaline or acid), regulating also the osmotic pressure of the cells. In the animal body the alkaline metals circulate in the form of ions, while the alkaline earths (specially calcium) are in the state of complex combinations with the protein substances. There would seem to be a much more marked antagonism between calcium and potassium than between sodium and potassium. Calcium is among the most important elements owing to its constructive effects, retarding metabolism and stimulating the sympathetic nervous system. Potash, on the other hand, stimulates metabolism, and the vagus nerves, develops the capillary cell system and glandular action (thyroid), and promotes the transformation and passage from the state of gel to that of sol.

Potash would appear to be effective in opposing a diminution in the sensitiveness of the organism.

If an animal is fed mineral elements (Ca, K, Na) in large quantities there is considerable modification of the blood content in these substances. Thus, for example, the mineral content of the blood of pigs which had received large doses of minerals (0.5 gm per kg of live weight) was 4.5 times greater than that of normal blood.

(*Die Ernährung der Pflanze*, Berlin 1933, Nr. 8).

G. S.

"NORMIKRA": A MIXED FEED. — At the Institute of Animal Husbandry and Genetics of Domestic Animals connected with the Agricultural College of Berlin, C. KRONACHER, J. KLIESCH and H. SCHUBERT have carried out a feeding experiment with the "Normikra" mixed feed for dairy cows produced by the molasses feeds factory of BERMINER A. G., at Berlin.

According to the figures supplied by the makers the feed has the following constitution: 10 % ground linseed cake, 20 % crushed soya cake, 20 % crushed sunflower seed cake, 10 % crushed palm oil cake, 20 % wheat bran and 20 % molasses.

From the results of the test it would appear that the feed in question may be regarded as a suitable mixed feed for dairy cattle, provided that all the ingredients are of satisfactory quality and that the price corresponds to the current prices of the component parts as fixed on the basis of their food value.

S. T.

SWEETENED MILLET AS A POULTRY FEED IN MINNESOTA, U. S. A. — From the data reproduced below and the tests carried out it would appear that millet may be used with advantage to replace maize in part or completely in the poultry ration. It has already been used as a maize substitute in the United States and is found to give excellent results while reducing the cost of the feed and consequently the price of poultry meat and eggs.

*Chemical composition and food value of sweetened millet and maize.*

	Sweetened millet	Ordinary maize
Moisture content . . . . .	10.10	14.28
Ash . . . . .	1.45	1.78
Crude fat . . . . .	3.55	4.26
Protein . . . . .	11.20	10.27
Cellulose . . . . .	6.79	1.06
Starch, sugars, etc. . . . .	66.91	68.36
	<hr/>	<hr/>
	100.00	100.00
Nutritive ratio . . . . .	1 : 7.09	1 : 8.13
Food value (in starch equivalents) . . . . .	78.63	76.64
Total calories . . . . .	3,256.96	3,173.33
Calorific value (expressed in starch) . . . . .	3,223.83	3,143.24

A study of this table shows the following facts in confirmation of what has been said above :—

(1) The chemical composition of sweetened sorghum grain resembles that of maize, but contains slightly less ash, fat and carbohydrate, and is slightly richer in protein.

(2) This last fact increases slightly the nutritive ratio, the food value and calorific value of sorghum as compared with maize.

(Carlos M. ALBIZZATI, *Agricola*, Buenos Aires, 1932, No. 321, pp. 110-111).

Cattle.

THE QUESTION OF DAIRY PRODUCTION IN THE NETHERLANDS. — Overproduction and low prices are obliging Dutch milk producers to seek means of remedying the crisis. One of the methods most acceptable to many is the reduction of production by limiting the head of stock. The need for the measure is becoming increasingly urgent.

In a recent article in the *Tijdschrift voor Diergeneeskunde* (Utrecht, 15 February, 1933) Dr. G. M. VAN DER PLANK states that he is in agreement with the principle of

the measure proposed, but asks that the reduction in stock be accompanied with a rigorous selection, eliminating in the first place all unprofitable yielders and any diseased animals. In no case would a reduction in calves be desirable, as this would not immediately reduce milk production but would reduce the future possibilities of selection.

The reduction of head of stock is, however, very difficult in practice, for each producer " would gladly see a reduction in stock..., but on the farms of others rather than his own ". The writer suggests the formation of a special service for execution of the measure.

The article says nothing of the reactions that a reduction in stock would have on the meat markets while it was being put into effect. The market would be flooded with an increased number of slaughter animals.

S. T.

### Pigs.

FOUNDATION OF AN AUSTRIAN NATIONAL ASSOCIATION OF BREEDERS AND FATTENERS OF THE GERMAN IMPROVED PIG (VEREDELTES DEUTSCHES LANDSCHWEIN). — This association was formed in March 1933 in Salzburg. Its purpose is to introduce a uniform breeding programme, to organise standardised yield competitions and fattening tests. It will also endeavour to influence the pig markets by common action.

(*A. N. Z.* (Agrarische Nachrichten Zentrale), Vienna, April 1933).

S. T.

### Poultry.

ACTION OF ULTRASHORT WAVES (3M) ON HATCHABILITY. — The fundamental research of ARSONVAL shows that high frequency waves have the property of influencing vital processes from a distance. A. JELLINEK in experimenting with these waves on birds eggs (parrot) proved that in an oscillating field these eggs (which like all birds' eggs require to be brooded at a temperature of 39° C.) develop well at a temperature of 29° C. The vital processes were found to be normal but more vigorous. Measurement of the temperature inside the eggs by means of a thermoelectric couple showed that the principal action of the ultra-short (3m) waves consisted not only in heat but also in a specific action which should be studied.

(*Comptes rendus de l'Académie des Sciences*, Paris, 1933, tome 196, No. 15).

G. S.

## Agricultural Industries.

### Industries of Plant Products.

DECOLORISATION AND DEFECTION OF JUICES BY ACTIVATED CARBON PASTE IN SUGAR MANUFACTURE. — As a result of exhaustive studies carried out by R. FETTER it would appear that :—

(1) There is no theoretic relationship between the quantity of char used and the degree of decolorisation obtained ; experimental tables may however be drawn up indicating the quantity of carbon paste necessary to obtain the required decoloration ;

- (2) The limit of concentration of the juices to be decolorised seems to be between 60° and 71° Brix ;
- (3) The maximum decolorisation may be obtained in a definitely acid medium ;
- (4) A very high temperature, exceeding 90°C., has no effect on the decolorising action ;
- (5) The time required for decolorisation is 10 minutes.

Highly concentrated solutions give the least favourable conditions for the action of the char.

(*Annales de Gembloux*, Gembloux, 1932, N° 11).

EFFECT OF STORAGE ON VITAMIN A IN DRIED FOODS. — The recognition of the importance of vitamin A in human and animal nutrition has increased the commercial importance of some foods or feeds known to be good sources of vitamin A. Alfalfa meal, alfalfa leaf meal, yellow corn, and some other feeds are used by feeders and by manufacturers of commercial feeds, partly for the purpose of supplying vitamin A. Preference is given to certain human foods on account of their high content of vitamin A. The effect of storage on vitamin A thus becomes of industrial as well as of agricultural importance.

Information regarding the effect of storage upon vitamin A in foods is limited and somewhat contradictory.

There is a gradual loss during storage in the vitamin A content of alfalfa leaf meal, dried black-eyed peas, dried green sweet peppers, yellow corn, and powdered whole milk.

Measured by the SHERMAN-MUNSELL unit method, alfalfa leaf meal lost about 50 per cent. of its vitamin A in 11 months, dried black-eyed peas 50 per cent. in 9 months, dried green sweet peppers 80 per cent. in 19 months, powdered whole milk 60 per cent. in 9 months, and yellow corn 30 to 50 per cent. in 6 months.

The loss of vitamin A in dried samples stored in the laboratory should be taken into consideration in experimental work. It is possible that the loss would be less for goods stored in a cooler climate or in cold storage.

The loss of vitamin A in stored feed may be a factor of considerable importance in connection with the feeding of animals or man.

The amount of destruction of vitamin A varies both with the length of the storage period and the kind of material containing the vitamin.

Grinding corn before storage does not seem to increase to any noticeable degree the loss of the vitamin A in yellow corn as compared with the whole grain.

(*Industrial and Engineering Chemistry*, Vol. 25, April 1933, pp. 465, 466).

G. S.

VITAMINS AND THE FOOD VALUE OF MOSCATO DATES. — Careful experiments carried out on rats and pigeons by R. LÉCOQ have shown that the pulp of moscato dates, which are particularly rich in glucides, has a food value greatly superior to that of ordinary sugar. This superiority is very largely due to the content in vitamin (or pro-vitamin) A and vitamins B and C.

(*Comptes rendus de la Société de Biologie*, Paris, 1933, N° 16).

G. S.

USE OF POTASSIUM CARBONATE AND OLIVE OIL IN THE DRIED GRAPE INDUSTRY. — In Turkey, before the bunches of grapes are put to dry they are immersed in a solution of  $K_2CO_3$  to which olive oil has been added ; this treatment conserves the colour and suppleness and elasticity of the skins.

(*Die Ernährung der Pflanze*, Berlin 1933, Nr. 8).

G. S.

### Industries of Livestock Products.

PRESERVING EGGS IN INERT GAS. — Such good results have been obtained in a number of countries, particularly in England (Chelmsford) and France (Hâvre), with this process for preserving eggs for as much as a year, that it is considered of value to describe the technique of the process here.

It is essential to use for the purpose selected eggs which are not more than 3 days old. Preferably the eggs should be rubbed with a mixture of chalk and talc in equal proportions, then wiped, before being placed in rectangular non-rustable containers (of tinned iron, stainless steel, etc., never wood) fitted with taps, and pivots allowing of rotation. The container is fitted inside with a basket made of metal wire or some rustless material such as galatite, etc., in the form of trays with compartments to keep the eggs separate and firm. The container is turned through a right angle every 15 days in order to keep the yolks always in the centre of the eggs. When the air has been removed from the container a mixture of dry  $CO_2$  (1 part) and N (12 parts) is introduced, leaving a slight pressure.

The eggs are kept at about  $0^{\circ}C$ . When they are to be removed from storage they are brought slowly (24 hours) to normal temperature, then left in the air for 24 hours, rubbed lightly with a cloth, and are then ready for marketing for consumption. In this state they keep nearly as well as fresh eggs in the same conditions. They have not lost in weight to any appreciable extent and keep all the characteristics and digestibility of fresh eggs.

(*Boletín de la Sociedad Nacional de Agricultura*, Santiago de Chile, octubre 1932).

G. S.

### Agricultural Education.

AGRICULTURAL EDUCATION IN DENMARK. — In the *Journal of Agriculture* published by the Ministry of Agriculture of the Province of Quebec (January and February issues 1933), M. LEROY POULIN gives an account of the main features of the organisation of agricultural education in Denmark. From the agricultural point of view the Danish school system is noteworthy by reason of its elementary school system, its system of People's High Schools (*Folkehøjskoler*) and its agricultural schools. Elementary education is compulsory from the ages of 7 to 14 and the elementary schools prepare for the People's High Schools. Founded in 1844, by 1927 the number of schools of this class was upwards of 80 and the number of students nearly ten thousand. They play a highly important part in the cultural development of the young people of the countryside and make a special feature of giving instruction in sound methods in agriculture and in stock raising and also carry out propaganda for the co-operative movement. Students of both sexes from 18 to 25 years of age are eligible for admission, the young mens' classes being held from November till March and the girls' instruction being given from May to July. Out of a total of 6,719 students in the year 1926-25, only 7% were from the towns.



In Denmark the agricultural schools are a direct outcome of the People's High Schools. While the influence of the latter is of an intellectual order, the agricultural schools are of the vocational type. All the agricultural schools in Denmark are independent of the State and are founded by private individuals or by societies of agriculturists on a joint-stock bases. The State allows certain small grants and the different Departments award bursaries to needy students. They are open in the winter only, the courses of instruction lasting as a rule from the beginning of November till the end of March. Instruction takes the form of lectures followed by questions. They are boarding establishments, students, instructors and staff all living a life in common. Other characteristics are that no fees are charged and no examinations held. In addition a farm, which is under the charge of the director, is attached to each school. The students do no practical work on the farm which serves them for demonstration purposes only. These agricultural schools are extremely well attended.

*Advanced instruction in Agriculture.* — Advanced agricultural instruction is given at the Veterinary and Agricultural Institute founded in 1858. This institution has six educational sections, viz., for Agriculture, Veterinary Medicine, Land-surveying, Horticulture, Forestry and Dairying.

The example of Denmark shows that the solution of the agricultural problem lies mainly in the school and in this view the Minister of Agriculture, M.G. ADELARD-GODBOUT concurs.

## Agricultural Research.

THE AGRICULTURAL EXPERIMENT STATIONS IN THE UNITED STATES IN 1931 (*Experiment Station Record*, Editorial, December 1932). — The Office of Experiment Stations of the United States has published its annual report covering the fiscal year ended June 30, 1931. This report reviews the work and expenditures of the stations in the several States and in Alaska, Guam, Hawaii, Puerto Rico and the Virgin Islands. A review occupying nearly 100 pages epitomizes their outstanding contributions to the science and practice of agriculture and the betterment of rural life.

The aggregate income of the stations for the year was 18,056,282 dollars, exceeding by 145,158 dollars the total for the previous year. The Federal contribution remained substantially unchanged at 4,340,000 dollars, while from other than Federal sources there was derived 13,466,082 dollars, or 74.5 % of the whole. A sustained interest by the States themselves is clearly indicated by these figures. During the year the personnel associated with the stations increased from 3,254 to 3,419. Many additions were also made to lands, buildings, laboratories and various special forms of station equipment. The number of publications rose from 881 in 1930 to 931 in 1931. The report contains details of the status of economic and sociological research and on cooperation in research. It appears that the cooperation between stations made distinct progress during the year. Every experiment station cooperated with the Federal Department of Agriculture.

The number of cooperative agreements per station ranged from 2 to 59, the total number being 987; this figure was 16 % fewer than during the previous year, but the decrease is attributed not to declining interest in cooperation but to « completion of certain studies and consolidation of several cooperative studies into larger undertakings of broader significance ». The annual cost of the stations is computed to be only about

15 cents per capita for the population of the United States, and the benefits from their work are believed far to exceed the cost, and are not confined to the rural population, but accrue to all the people and all the industries of the country.

D. K.

FEDERAL APPROPRIATIONS FOR AGRICULTURAL RESEARCH IN THE UNITED STATES (*Experiment Station Record*, December 1932, Editorial). — The total appropriations for agricultural research and related activities under funds administered by the Federal Department of Agriculture for the fiscal year ending June 30, 1933 amount to 21,259,944 dollars, including 16,885,994 dollars allocated to the Department itself and 4,374,000 dollars for payments for research under the HATCH, ADAMS and PURNELL Acts. Considerable as are these sums in the aggregate, they represent less than 11.4 % of the total appropriations embodied in the so-called « permanent legislation ». Out of the 186,883,236 dollars constituting the total of these appropriations, which are often regarded as representing the Government's contribution to agriculture, 109,405,000 dollars are used for payments for Federal-aid highways and forest roads, and one million dollars has been allotted for Federal participation in the 1933 Century of Progress Exposition at Chicago. The allocations for research show a decrease of 2,004,418 dollars as compared with those of the previous year. The Offices most seriously affected by this curtailment are the following :—

Office of Experiment Stations (because of changes in the insular experiment stations) : reduction of 100,116 dollars ;

Bureau of Plant Industry : from 4,821,830 to 4,200,940 dollars ;

Bureau of Entomology : from 2,006,783 to 1,797,700 dollars ;

Bureau of Agricultural Economics : from 2,104,051 to 1,925,080 dollars ;

Bureau of Chemistry and Soils : from 1,819,925 to 1,686,740 dollars ;

Forest Service : from 502,512 to 395,000 dollars, etc.

The amounts will also be curtailed under legislation contained in the Economy Act of June 30, 1932. This act requires also the retention in the Treasury of at least one month's salary from all employees of the Department. The Department's effective allotment for research therefore becomes less than 16,000,000 dollars. This is probably not far from the amount which will be available to the State experiment stations from all sources for the same period. The total per capita expenditure for agricultural research for the year by both State and Federal agencies will evidently be less than 30 cents. It is a much smaller outlay than is sometimes supposed.

D. K.

## Rural Hygiene.

PER CAPITA MEAT CONSUMPTION IN VARIOUS COUNTRIES. — *The Agricultural Gazette of New South Wales* (Sydney, 1 February 1933) gives figures of the meat consumption in different countries. Australia and New Zealand consume annually 250 lbs of meat, principally beef and mutton, per head of the population. Great Britain, the United States and Canada have an annual per capita consumption of 150 lbs, of which 80 lbs are pig meat and 60 lbs beef. In Great Britain the average meat consumption per head consists of 70 lbs of beef, 40 lbs of pig meat and 30 lbs of mutton. Germany consumes more pig meat than beef, France more beef than pig meat, and neither country consumes any considerable quantity of mutton. The annual meat consumption per head in Germany is 110 lbs and in France is 90 lbs.

S. T.

## BOOK NOTICES

### Soil Science

Dr. PAUL EHRENBURG, *Der Bau des Ackerbodens*, gemeinverständlicher Abriss der auf den Ackerboden angewandten Kolloidforschung, 96 p. Dresden & Leipzig. Verlag von Theodor Steinkopff, 1933.

The title of this small volume of 96 pages may be rendered: « The structure of arable soil, a popular summary of colloid research applied to the soil ». The writer, who is Professor at the University of Breslau, published in 1915 a comprehensive work on soil colloids (*Die Bodenkolloide*), of which a 4th edition is now in preparation. But this learned work is not available for all, and in the preface of the present volume the writer states that he has had in mind an abridged edition ever since the appearance of the original work, but lack of time together with the great difficulty of explaining colloid science to the farmer in a brief space have hitherto prevented him from carrying out the idea.

The need for the abridged edition had become particularly acute, he remarks, as specially in Germany the economic crisis is preventing agricultural students and still more practical farmer from buying more than the cheapest and most condensed books.

For a quarter of a century the writer has been repeatedly drawing the attention of theoretical and practical workers to the importance of the colloidal phenomena in arable soil and he affirms that farmers now realise its importance and are interested in the scientific questions which bear on tillage, manuring, etc. As he thus hopes to be read and understood by the farmer he has been obliged to make the abridged text as clear as possible by basing the explanation on well known facts.

The small volume comprises an Introduction and the 3 following parts :—

A) *The soil colloids*. — Description of the colloids (silica, alumina, ferric hydrate, clay, humus), their properties and behaviour.

B) *Colloidal phenomena in the soil*. — Adsorption, coagulation, exchange of bases, capillary action, etc. Effects produced on colloids by atmospheric agents, etc.

C) *Soil structure*. — (1) In nature (effects of various natural agents); (2) Under cultivation (effects of various cultural practices).

The writer deserves much credit for having condensed into less than 100 pages and made accessible to all the results of recent colloid research and their bearing on agriculture.

T. B.

### Tropical Agriculture

O. T. FAULKNER & J. R. MACKIE, *West African Agriculture*. Cambridge University Press 1933, VII + 168 p., 1 illustr.

This book is written especially for the candidates for Government service in British West Africa in the Administrative and Agricultural Departments, but the writers hope it may prove useful also to missionaries. This will undoubtedly be the case, but the writers are too modest in limiting thus the appeal of the work. To our knowledge there are few monographs dealing in so attractive a manner with the great problems of colonisation and tropical agriculture.

The British colonies and protectorates in West Africa, namely, Gambia, Sierra Leone, Nigeria and the Gold Coast, are of particular interest in that nearly all the agricultural products come from native farming. There are no large European estates. Thus it is the work of the Government administration to promote the moral and material advancement of the natives of the country.

This is not always easy, as it is first necessary to understand the old methods of agriculture which must be improved by persuading the natives of the need for new methods of technique. As the same problem arises in nearly every tropical country, Chapter 8, which deals with extension work, is of very general interest. Basing their facts on their experience in Nigeria the writers give extremely useful advice. The introduction of new crop plants or new varieties and methods into native farming is one of the principal duties of the agronomist. The old method used for this purpose was that the European officer decides what it ought to be profitable to the native farmer to introduce, such as American cotton, rubber, sisal, cacao, or some other new crop, and then seed was distributed free and the whole influence of the administration was used to encourage the farmers to plant it. This method was very rarely successful; in most cases the farmers proved reluctant to follow the advice. A new method is now used, which is stated in the instructions of the Nigerian Agricultural Department as follows :

« (1) No recommendation should be made to any native directly, nor to any political officer, or other person who may convey it to any native, which is not based on the results of experiments.

(2) When such a recommendation is made it should never be made in such a way that it may take the form of a general instruction; but it should be made (of course with the concurrence of political officers) to certain selected natives or in certain selected villages. If it proves successful there, the example will certainly be followed by others. If the soundness of the advice is thus proved, general recommendation might there after be justified, but will almost certainly be found to be unnecessary, or at all events avoidable ».

Government demonstration farms may be useful, but it is necessary to avoid the use of any but the simplest buildings and methods, as, if the natives do not fully understand them, they will regard them as impossible to copy. Another difficult question is whether to approach the native directly or through the intermediary of the chief. The importance of this chapter has been particularly emphasised because, in our opinion, it is of the greatest general interest.

The first part of the book is devoted to general subjects and the second to some of the chief crop plants and livestock. In Part I there is a chapter on « Shifting cultivation », the process of clearing forest for cultivation for short periods which is so widely followed in tropical countries. The problem of replacing this form of cultivation by permanent cropping is of interest therefore in many of the undeveloped countries. The essential requirement is a manure which may be economically used. The green manures are of interest for this purpose [and for this reason the writers have fully discussed their use.

Space is not available here to give even a brief summary of the various crop plants. The oil palm and the cacao are the most important, as having contributed very largely to the economic progress of West Africa. The writers mention also kola, coconut, rubber, cotton, groundnuts, sisal, ginger, maize, millet, rice, and various root crops and vegetables. The last chapter is devoted to livestock.

## Industries of Plant Products.

LECOQ R., *Le malt et la pratique du maltage*. Paris 1933, Vigot éditeur.

In this work the writer presents the results of his recent research on the utilisation of food substances by the organism and the value of malting. In addition to the direct nutritive value of the malt, it is necessary to take into account its digestive value, which is more or less a function of its assimilation by the digestive organs. "

The manner of utilisation of carbohydrates and the part played by vitamin *B* in such utilisation are more particularly studied. The writer observes, for example, that glucose obtained industrially by rapid hydrolysis of starch requires for its real assimilation by the organism a much greater quantity of vitamin *B* than does maltose obtained by biological hydrolysis of starches. Thus malting is of great interest in practical dietetics.

Starting from these facts the writer describes from theoretical and practical points of view the preparation of malt and its derivatives and the mechanism of the action of the diastase of malt; he makes a thorough study of the diastasic activity of the derivatives (flour and malt extract), and explains its rational use. The writer's researches concerning the biological balance of the food ration with special reference to the presence or absence of vitamin *B* are of particular interest.

He is concerned with the question of the use of flours, doughs and breads which have been treated with malt, maltose or diastase. He discusses the question which has recently come up regarding the use of raw sprouted wheat as a natural malted food and concludes by an account of the rational use of the derivatives of malt for the malting foods.

The writer hopes that this work will contribute to the spread of the practice of malting and so will result in a more health-giving and satisfying nutrition of the healthy as well as the diseased organism.

G. S.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

### EDITORIAL

#### Forest Fires.

Attention was called in the last number of this Review to the present-day magnitude of the problem of cellulose. This forms an additional reason to those already fully recognised in favour of reafforestation in all countries.

It is not however enough to ensure the afforestation of the areas corresponding to the world requirements in cellulose. It is essential also that the forest stands should receive satisfactory attention, and that the trees should be protected against all sources of danger. There is no greater peril for forest than fire.

This risk, in regard to which the public at large have unfortunately little clear conception, has engaged the attention of forestry experts, in particular during the First World Forestry Congress held at Rome in 1926.

It was in consequence of a resolution of this Congress that the International Institute of Agriculture at Rome undertook an *Enquête internationale sur les incendies des forêts*, an enquiry the results of which have been systematically arranged by the Forestry Section, under the expert direction of Dr. Silvio CAVIANCA, and now form the subject of a volume of 457 pages.

This new publication contains the detailed statement of the replies made to the 13 questions submitted to the experts of the various countries by the International Institute of Agriculture. These highly interesting documents establish beyond dispute the fact that "forest fires are not a phenomenon peculiar to countries with a hot dry climate" and that "the danger of fire exists for all types of forest, whatever may be the climatic conditions of a region".

This universality of a risk which increases daily with human carelessness creates a problem of an essentially international character, that of the co-ordination of efforts to prevent and remedy the effects of forest fires. It is essential to come to an understanding on the methods of a plan of action, applicable to the whole world.

Prof. Georges RAY.

### ORIGINAL ARTICLES

#### The Power Take-off for Tractors.

The tractor made its appearance as a substitute for animals on the land with a view to reduced production costs and increased output. Scarcely a quarter of a century was required to demonstrate that the transformation was practicable and to herald the arrival of a new technique that the coming of this machine alone could make possible.

It is sufficient to recall the old custom of using animal traction on the farm and the many uses to which the animals were put, to realise that little by little, after surmounting many obstacles, the tractor has made the conquest of the ground available to it, even to the point of acquiring complete dominion on the so-called 'horseless' farm.

This explains why the history of the tractor has been a series of transformations for adaptation to requirements. In some cases simple modifications in detail and in others more radical transformations of essential parts, introduced as a result of experience gained in the course of time, have solved in successive stages the problem of the penetration of the tractor into farms of the most diverse types, both as regards the crops grown and the nature of the land. Each improvement offers the farmer a new possibility of using the tractor and so of spreading the purchase outlay over a greater number of days' work.

This concentration of uses is not intended solely to replace one form of power by another more economical form, but aims also at improving and facilitating the work and generalising new methods for increasing the output of the land.

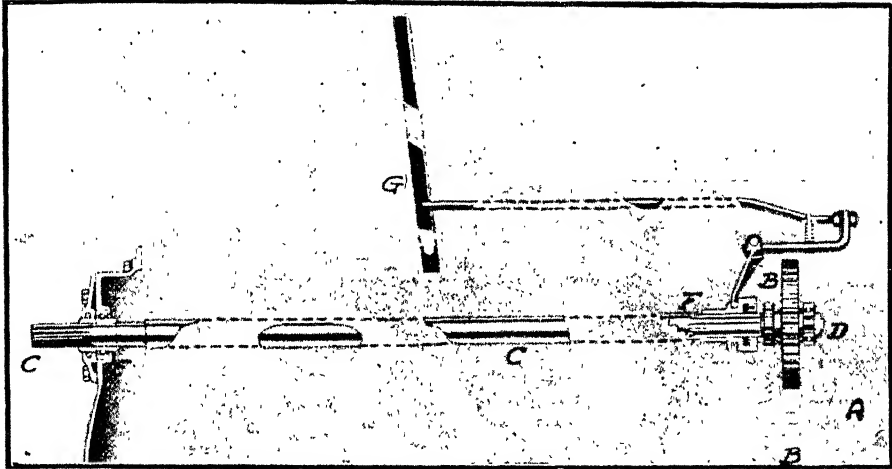
These factors have brought about the introduction in modern tractors of the power take-off, an attachment which utilises directly the engine power to drive the mechanism of the machine hauled.

Under the term power take-off are included all the mechanisms utilising the engine power for purposes other than traction, whether the tractor is stationary or in motion. Such is the case for the exterior transmissions of industrial tractors working capstans mounted on the chassis for raising or hauling loads ; for devices for mechanical operation of the working parts of tractors for public works ; and even for farm tractors where the engine is required to raise or lower the implements used.

A special group is formed by the power take-off attachments proper, when used to drive machines hitched to the tractor. It generally takes the form (fig. 1) of a shaft (C) which is turned by the gears (B) coupled to the clutch shaft of the tractor (A) and is supported partly on bearings (D) mounted forward on the gear box and partly on bearings (E) placed under the driving seat. Two cardan joints (A, B, fig. 2) allow of the articulation of the power take-off shaft with the drive shaft of the machine drawn (C) so that the transmission may be perfect in spite of the oblique position and the deviations occurring while in motion. A simple clutch (fig. 1) with a grooved sleeve (F) and lever (G) disengages the power take-off.

The idea of utilising the tractor power for working the machine trailed is not as recent as may be thought. In 1905 an ingenious French manufacturer, M. GOUGIS, had already made experiments on the subject of splitting the power with a view to eliminating the disturbances in the functioning of the reaper and binder caused by irregular working of the driving wheel on unfavourable ground. The invention made no progress and fell into oblivion, but the problem of the irregular functioning of the wheel drive continued to interest manufacturers and farmers. A proof of this is that some years later auxiliary engines were installed on reapers to reduce the work of the driving wheel merely to that of transport.

FIG. 1. — *Power take-off: General view.*



LEGEND.

A = Clutch shaft of tractor  
B, B = Gears of power take-off  
C, C = Power take-off shaft

D, E = Bearings of power take-off shaft  
F = Grooved sleeve of clutch  
G = Clutch lever

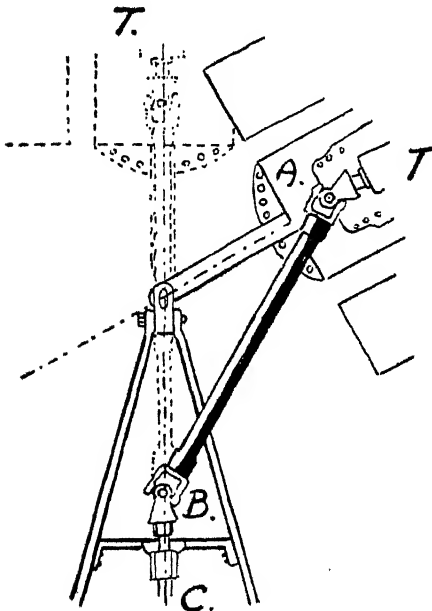


FIG. 2. — *Power take-off: Details of mechanism.*

LEGEND.

A, B = Cardan joints  
C = Drive shaft of machine trailed  
T, T = Tractor

The United States then solved the problem which had been so much under discussion, particularly in connexion with the late varieties of maize which were constantly menaced by the rains, as wet weather made the use of the ordinary reapers impossible.

Another machine, the potato digger, which was a matter of much dispute owing to its defective working in unfavourable conditions, found a remedy for its greatest defects in the attachment of an auxiliary engine.

To-day the power take-off has supplanted these stationary auxiliary engines by utilising, paradoxically, the tractor as a stationary engine while in motion. By this means all the difficulties connected with the wheel drive are removed while at the same time the work is simplified.

Certainly, the use of tractors in the traction of light machines such as those just mentioned is not economical in comparison with horse traction, because the power is only incompletely utilised ; but the fact should not be overlooked that on furrowed and often stony hillsides the poor quality of the work effected by animal traction would to some extent counterbalance its advantages (1).

It should be noted also that the power take-off is in general adapted to medium sized tractors, the relatively low power of which is to a large extent consumed, and that there is moreover a tendency to use wide machines which entirely consume the available power. The fact should not be lost sight of that in favour of the power take-off there will always be the economy obtained by the direct use of the engine power to replace drawbar traction, which entails considerable loss while running over the ground.

Another unmistakably useful application of the power take-off is in operating the harvester-thrasher combine, in which it removes the necessity for the auxiliary engine and lowers the cost of the machine, thus bringing the combine within the reach of many farmers who could not previously benefit from its rapid and economical work.

A considerable time will undoubtedly have to pass before the use of the combine is general and before the complete solution of the problems connected with the use of a single engine for both traction and operating the thrasher, particularly those concerned with the irregular transmission of the power, which is an indispensable condition for perfect thrashing. But it is not foolhardy to predict that a great success awaits this system of harvesting.

The same may be said for hay baling with presses both drawn and operated by the tractor. The grass lands will no longer be animated after mowing with the coming and going of the hay carts. There will now be the elevator of the fodder press which will collect the swathes and discharge them into the hopper near the baling presses driven by the power take-off and will release the bales on to the ground or even load them direct on to the wagon for transportation.

A further excellent idea is that of doing away with the auxiliary engine in large spraying machines and replacing them by a power take-off attachment

(1) Experience in Spain in unfavourable conditions of the type mentioned enabled the writer to prove the economic advantages of the power take-off for reapers in farms in which, animal traction having been abolished, the costs were compared with those of hand reaping.

with the injection pumps, when the cart carrying the liquid spray is fitted with them. The structure of the sprayer may also be modified by using the reservoir as a tank, in which case it is sufficient to mount on the tractor a pump which is driven directly by the power take-off and draws the liquid from the tank by a tube and feeds it to the spray jets.

As a result of the power take-off, rotary tillage, the efficacy of which is a matter of dispute, is entering on an interesting phase. Conclusive information may be obtained on the advisability of pulverising the soil either with ploughs with mouldboards fitted with rotary devices or by supplementary tillage with cultivators based on the rotation of their tines.

At the present moment the advantages which are listed above as attributable to the power take-off and serving to multiply the uses of the tractor, encounter the difficulties inseparable from little tested machinery. The greatest of these difficulties is undoubtedly due to the fact that it has been endeavoured to utilise the power take-off on ordinary tractors with only slight modifications. The characteristics of the new drive evidently require machines of special structure, easy to grease effectively and fitted with safety clutches to protect the working parts against undue speeds and strains.

Time will allow of drawing the full benefits from this new mechanism, but to-day it may be said that we are in the presence of a transformation of the method of utilising the engine power of the tractor.

F. ARANDA HEREDIA

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#### **Designation and Grading of Olive Oils (Conclusion). \***

**I t a l y .** — In view of the uncertainty which exists in regard to the grading of olive oils, the Italian Olive Growers' Association has established an Advisory Committee. This Committee has recommended the observance of the following principles in regard to the designation and classification of olive oils:—

(1) As regards designation, to follow the lines laid down by the law on adulteration;

(2) To apply the term "olive" exclusively to the product resulting from the treatment of olives, with no admixture of rectified oils.

\* For the first part see: Monthly Bulletin of Agricultural Science and Practice, September 1932. No. 9, pp. 351-359.

In adopting the recommendation of the Committee the Italian Olive Growers' Association proposed the following designation and grading :—

**Edible or table olive oils.**— By this term is understood oils with no unpleasant odour, e. g. rancid, smoky, mouldy, etc., and an acid content, expressed in oleic acid, not exceeding 4 %, with a maximum tolerance of 10 % of this percentage.

As regards the quality, edible olive oils are graded and designated as follows :

(1) *Virgin olive oil* : obtained from sound olives by mechanical means, without chemical treatment, the only processes to which the product is subjected being cleansing, filtration and sedimentation ; the acid content not exceeding 1 % calculated in oleic acid, with a maximum tolerance of 10 % of this percentage.

(2) *Fine olive oil* : obtained from sound olives by mechanical means, without chemical treatment ; cleansing, filtration and sedimentation being the only treatment given : the acid content not exceeding 2.5 %, calculated in oleic acid, with a maximum tolerance of 10 % of this percentage. This class includes oils composed of a blend of rectified oil (obtained, by means of rectification, from defective oil pressings, and therefore not edible) and virgin or fine olive oil.

(3) *Ordinary olive oil* : obtained from olives by mechanical means without other treatment than cleansing, filtration and sedimentation ; the acid content not exceeding 4 % calculated in oleic acid.

(4) *Rectified oil* : obtained from the product of defective pressing and chemically treated in order to disguise the colour, odour, or flavour.

(5) *Edible olive residues oil* : obtained from olive residues and chemically treated in order to disguise the odour, colour, or flavour.

**Inedible olive oils.**— Oil from pressing which has an unpleasant odour, e. g. rancid, smoky, mouldy, etc., with an acid content in excess of 4 %, calculated in oleic acid. It is obtained directly from residues by cleansing or extracted by solvents.

As regards quality, inedible olive oils are graded and designated as follows :

(1) *Burning oils* : obtained from olives by mechanical means, submitted to no chemical treatment, and having unpleasant odours, e. g. rancid, smoky, mouldy, etc. : and or with an acid content exceeding 4 % calculated in oleic acid.

(2) *Purified oils* : obtained from the washing of residues.

(3) *Oils extracted by solvents* : obtained from residues by solvents such as carbon disulphide, tetrachloride of carbon, trielin, petrol, etc.

The above designations and gradings present the following advantages :—

(a) the characteristics of each quality are specified, showing clearly the superiority of the virgin olive oils ;

(b) the blending of refined oil with other gradings is not prohibited, such blending being necessary in the case of oils exported to certain markets ;

(c) refined oils and others of inferior quality are grouped in a lower category ;

(d) there is an approximation to the trade grading ;

(e) there is an increase of 10 % on the acid content as compared with the proportions allowed for virgin and fine olive oils.

As regards legislation dealing with the olive oil trade, mention may be made of the Royal Decree Law of 15 October 1925, No. 2033, converted into law by the law of 18 March 1926, No. 562, for putting an end to improper practices in the preparation of agricultural products and the trade in such products. This law applies to food oils.

Some of the above mentioned measures were subsequently modified by the Royal Decree-Law of 30 December 1929, No. 2316, converted into law by the law of 12 May 1930, No. 776, prohibiting the artificial colouring of edible vegetable oils, as also the admixture of olive oils with other edible vegetable oils. The law of 10 March 1931, No. 51, provides for the addition of 5 % of sesamum oil to edible residue oils, in order to produce the characteristic colouring.

T u n i s . — The decree of 10 February, 1931, for the regulation of the food oil trade, enacts that the description of a food oil as the product of the olive or of any other fruit or seed may only be applied to oils produced exclusively from the olive or from such other fruit or seed as is indicated in such designation. No other food oils may be offered for sale except under such designations as indicate the fruit or seed from which they are produced. The sale of olive oil blended with other fruit or seed oil is prohibited. Food oils must be offered for sale by retail dealers under one of the following designations: — "First quality" or "extra" — "Second quality" or "superfine" — "third quality" or "fine" — "fourth quality" or "ordinary" — "fifth quality" or "burning oil". The only oils which may be designated as "first quality" or "extra" are those which have a perfect flavour and an acid content, calculated in oleic acid, of less than 1 %. Olive oils of this category must be extracted from the olive by mechanical means and be entirely free from any admixture of refined residue oils.

The designation "second quality" or "superfine" may be applied only to oils with a flavour not absolutely perfect and an acid content, calculated in oleic acid, of less than 2 % — "third quality" or "fine" to oils with a slightly unpleasant flavour and an acid content, calculated in oleic acid, of less than 3 % — "fourth quality" or "ordinary" — to oils with a distinctly unpleasant flavour and an acid content, expressed in oleic acid, of less than 5 %. Those oils not included in the above categories and or with an acid content in excess of 5 %, are designated "fifth quality" or "burning oils". A proportion of 10 % of the above-mentioned rates of acid contents is allowed, with a minimum of 0.2 %.

All receptacles in which food oils are offered for sale in retail establishments must bear a legible designation label, showing clearly the class to which the contents belong.

A l g e r i a . — The Director of the Agricultural Experiment Station at Barral is of opinion that the different qualities of olive oil in the region of Bône should be graded as follows:—

<i>Fine</i> . . . . .	acidity below 0.5 %
<i>Semi-fine</i> . . . . .	» between 0.6 and 1.3 %
<i>Ordinary</i> . . . . .	» in excess of 1.3 %

These terms should be applied only to the product resulting from pressure or other mechanical treatment of the olive.

Oils which have undergone chemical treatment should be described as "*rectified olive oil*", this designation being compulsory.

French Morocco. — The International Institute of Agriculture is informed by the Director of Agriculture, Commerce and Colonisation, that Art. 14 of the Decree of 14 October 1914 states that :

"*Olive oil* is the product resulting from pressure of the fruit of the olive tree".

The Vizirial Decree of 22 November 1931 (22 rebia 1 - 1340) regarding the sale, among other products, of food oils and fatty food substances, prohibits the transport, holding, or offering for sale, under any given designation, of any oil which is not the exclusive product of the fruit or seed indicated by this designation.

Food oils offered for sale with no indication of the fruit or seed from which they are produced, or of the blends of which they are composed, may be designated only as "*edible oil*" or "*table oil*".

All oils with an acid content exceeding 5 %, calculated in oleic acid, if offered for sale with or without designation referring to origin, must bear one of the following indications: "*second quality*", "*choice second*", "*for frying*", "*home produce*".

The descriptions "*virgin*", "*extra virgin*", "*fine*", "*surfine*", "*superfine*" "*extra superior*", "*extra choice*", are to be applied only to oils whose designation indicates the fruit or seed from which they are produced, while their maximum acid content, calculated in oleic acid, must not exceed 1 %.

Oils with an acid content of from 1 to 5 % of oleic acid may be labelled "*first quality*", "*choice first*", "*first pressing*".

The use of these terms in conjunction with a trade-mark of any description is permitted only on condition that the trade-mark leads to no confusion as to the particular class to which the product belongs.

Trade designations indicating the admixture of fatty substances, as also the descriptions "*edible oil*" and "*table oil*", when these apply to a blended oil, may be accompanied by the mention of one or more of the constituent elements, but only on condition that this supplementary description gives the exact proportion in which they are blended.

Every olive-grower or dealer engaged in the exportation of olive oil must send to the official laboratories for analysis, on his own responsibility, a sample of each consignment, consisting of three bottles each containing at least half a litre. The report received by him, if the oil is found to be pure, certifies its quality and must be presented at the custom-house at the time of placing the consignment on board. Without this certificate the oil will not be exported.

France. — The National Association of French Olive-Growers states that the question of the designation of olive oil is so serious and difficult that no settlement has so far been possible in France, owing to the fact that there is strong opposition between producers and shop-keepers.

The Association, however, is of opinion that the matter will be decided at the XIth International Olive Growers' Congress, to be held at Lisbon in November 1933.



In order to combat the adulteration and improper practices which have been carried on during recent years, the Central Committee on Oils and Fats has passed the following recommendations:—

(1) That the food substances which, according to the law of 23 July 1907, the decree of 17 January 1930, and also various circulars issued by the Adulteration Service, must be designated “margarine” and “oleo-margarine”, ought to be offered for sale solely under the precise denomination of the natural products of which they are composed.

(2) That all food oils produced from seed or fruit must be offered for sale only under the denomination which is compulsory for these seeds or fruits, together with the statement of their national or regional origin.

(3) That the designation *Natural* or *Virgin* oil is to be applied only to oil extracted by cold pressing from ripe, well preserved fruit, free from rancidity the oil being well clarified, free from acidity and not refined, bleached or neutralised by chemical treatment.

(4) That vegetable food oils, refined, bleached or neutralised by chemical treatment, may not be offered for sale without indication of the seed and fruit from which they are produced, and their country of origin; also with an indication of the chemicals employed in the processes through which the oils have passed. Such indications are not required if these oils are sold as “oils for industrial purposes”.

Egypt. — The Minister of Agriculture states that there are no regulations regarding the olive oil industry, since olive growing has up to the present attained no great importance.

Turkey. — In order to facilitate the marketing of the national olive oil the Government has prohibited the importation of seed oils. Consumption of olive oil has superseded that of oil-seed oils in all the regions in the basin of the Black Sea.

A movement may now be observed in nearly all parts tending to establish virgin olive oil on the world markets and to prevent any blending of these oils with rectified oil.

The question of the designation and grading of olive oils is very complex since this problem does not take the same form in all regions. It must be taken into account that, in order that virgin or natural oil may have an established position on the market, it is necessary in the first place to obtain a good quality of oil by using only olives which are clean, sound and ripe. This may be achieved by carefully managing the harvest, avoiding the storage of fruit, establishing modern oil factories in certain olive-growing districts, and also in studying the factors which unite to maintain a high standard in oils; since a badly prepared *virgin olive oil* may be inferior to a *refined or rectified olive oil* in many respects, above all, in perceptible characteristics, flavour, odour, etc.; and it would be at the same time absurd as well as prejudicial to the olive oil trade, to designate as “virgin or natural oil” those oils which, as the result of defective preparation, have too strong a flavour, odour or colour. Badly prepared virgin or natural

olive oil will never compete successfully with well refined or rectified oil. At the present time the economic and technical requirements of a nation are such that so important an industry cannot be left in the hands of small oil factories which, as a rule, are without modern appliances and suitable machinery and cannot produce the types of oil demanded by the world markets. The essentially olive-growing districts, more especially those concerned with exportation, ought to be in co-operation with others which possess up to date plant and machinery and which, once provided with whole, fresh fruit, are capable of supplying fine oils.

In order that two or three standard types may be produced to meet the requirements of the principal markets, the International Institute of Agriculture has prepared a scheme for the designation and grading of olive oils which will be presented at the International Olive Growers' Congress, which will be held at Lisbon in November 1933. This scheme will serve as the basis of a long and comprehensive discussion between all the representatives of olive-growing countries, the object of which will be to reach a definitive solution of this important problem, meeting as far as possible the needs of the different countries.

A. PASQUAL.

## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

THE PRESENT DEVELOPMENT OF THE PLUVIOMETRIC SYSTEM IN FRANCE. — During the decade 1921-31, the quantities of rain fallen from *November to April* have on the whole increased over all the territory of France, except in January in the Eastern part of the country, and in March in the North Eastern quarter. The increases have been *maxima* in *November* and in *April*; they were especially large in the Northern quarter, where they exceeded, in each of these months, 30° and even 40°.

In *May* there was an increase in the rainfall in the Northern regions and a decrease in the Southern regions.

In *June*, the decrease in the rainfall was general; very marked in the South, perceptibly making up for the increase observed in March.

In *September* the decrease in the rainfall was again generalised over all France, except the East.

*October* was characterised by an increase in the rainfall in the Northern half of France, and by a diminution in the Southern half.

Speaking generally, the rains have thus increased from *October to May* in the Northern regions, and from *November to April* in the Southern regions.

In the other months (from *June to September* inclusive) the rains decreased or showed only slight differences, except for a somewhat perceptible increase in *July* in some parts of the Northern half. As a whole the variations in the measurements of the rain have not been as much as 10 % per annum in the majority of the regions; annual increases have exceeded this percentage only in the North and Central portions, with a maximum of 16 % in the Paris area.

This conclusion clearly proves that, despite certain ideas that are widespread in the country districts, the pluviometric system of France has not undergone any important modification that can be noted, since the great development of broadcasting;

in certain months the precipitation has increased ; in others it has diminished ; but the mean quantities of rain fallen yearly from 1921 to 1930 does not differ from the quantities collected before 1900.

(Joseph SANSON, in the *Bulletin des Engrais*, Paris 1933, No. 105, p. 103-104, one table).

T. B.

## Soil Science

MICROBIOLOGICAL POPULATION OF PEAT. — Messrs. S. A. WAKSMAN and E. R. PURVIS of the New Jersey Agricultural Experiment Station have made studies of great interest in respect of the different layers of a number of lowmoor (sedge layers) and of high-moor (sphagnum layers) peats. The following are their main conclusions which are novel and important :

(1) The prevalent view that peat bogs are sterile below the surface is entirely erroneous. On the contrary, these investigators found an abundant population of bacteria and in the case of certain lowmoor peats, of actinomycetes.

(2) In the case of the highmoor peats, the sphagnum layers contain only a relatively limited bacterial population. However, contrary to expectation, with an increase in the depth of the peat formation, there is not only no diminution in the number of bacteria, but frequently even a decided increase. The bacteria found in the lower depths of the bog seem to comprise largely certain specific types capable of growing in acid media (of PH 3.8 to 4.0), and of living both aerobically and anaerobically.

(3) The bacteria found in the lower depths of the highmoor peat profiles are *autochthonous*, or native to their medium, and *have not been brought there* by an outside agency. These organisms find in the anaerobic system of such peats a substratum as natural as the aerobic bacteria find in soils into which oxygen enters freely.

(4) The fact that the largest numbers of bacteria are found in those layers where the greatest decomposition has taken place indicates that these bacteria are largely concerned with the process of decomposition.

(5) The existence of cellulose-decomposing bacteria has been established not only in lowmoor and forest peats, but also in highmoor peats. The fact that in the latter the reaction (pH) is not very favourable for the development of these organisms, and the fact that the cellulose and hemi-celluloses of the sphagnum plants are highly resistant to decomposition by micro-organisms, account for the very slow disintegration of the sphagnum plants in the process of peat formation. Further explanation of this is found in the fact that, although sphagnum plants have only a relatively low nitrogen content (about one per cent of the dry weight), a part of this nitrogen will be liberated as ammonia when the decomposition of the sphagnum plants takes place, as a result of the inability of the micro-organisms to attack readily the carbohydrates of these plants.

(6) Certain results prove beyond doubt that not only are micro-organisms present in great abundance in peat laid down many centuries ago, but that their abundance is closely correlated with the decomposition of the peat-forming plants, as well as with the gradual changes still in process in the peat itself.

(7) All these results tend to show that micro-organisms, mainly bacteria, are chiefly responsible for peat formation successive and peat transformation.

(S. A. WAKSMAN and E. R. PURVIS, in *Soil Science*, Baltimore 1932, Vol. XXXIV, No. 2, p. 93-109).

T. B.

## Fertilising.

## FIELD FERTILISING TRIALS, BY MEANS OF CARBONIC ACID GAS, IN GERMANY. —

It is to-day very generally recognised that the proportion of  $\text{CO}_2$  in the air has not always an optimum value among the factors of growth, as the majority of cultivated plants are capable of absorbing a multiple of the normal proportion of  $\text{CO}_2$  in the atmosphere. It is even possible that, in the open field, at the moment of strongest photosynthesis, the  $\text{CO}_2$  of the air may be at a minimum, since within the assimilating zone of a mass of vegetation, its ratio may well fall considerably below the normal ratio of 0.03 % in volume.

The artificial enrichment of the air in  $\text{CO}_2$  should accordingly prove of value to the vegetation, and in fact it has been known, over a number of years, that the yields of cultivated plants may be considerably increased by the distribution *under glass* of carbonic acid gas in quantities varying, according to the plants and to the experimenters, from 15 to 430 %. On the other hand this form of fertilising has been tried to a much smaller extent *in the open*, and the experiments undertaken have not solved the problem.

This fact led Prof. BÖMER and Dr. RINTELIN (Agronomic Station of Munster, Westphalia) to undertake, in 1929-1930-1931, fertilising trials in the open by  $\text{CO}_2$ , with the view of finding, if possible, a solution.

The trials fields, situated at Sprakel (Westphalia) on fine sandy soil, included each 64 plots of 25 square metres, on which were cultivated the following eight plants: rye, potato, oats, lupin, beetroot, vetch, cauliflower, fodder maize, each on eight plots. One of these fields (B) was treated with  $\text{CO}_2$ ; in 1930 another field (A) served as the control and no gas was supplied; in 1931 a second control (C) was instituted.

Carbon anhydride, produced by a RIEDEL generator, in which at first (in 1929) wood charcoal was burnt and afterwards coke, was first freed from noxious impurities ( $\text{SO}_2$ , CO) by washing, cooled, and then supplied to the trial field, under steam pressure, by means of a metal conduit, which, opposite the field, branched into four pipes with lateral openings distributing the  $\text{CO}_2$ , at a height of 20 cm. above the soil.

*Period over which the  $\text{CO}_2$  was distributed.* — In 1930, this gas was distributed for 138 days, at the rate of 4 hours a day on an average. In 1931, it was supplied for 210 days, at the rate of 4 hours per day in November, March and April, and at the rate of 8 hours a day in the other months.

*Consumption of Coke.* — In 1930, this was 7.2 kg. per hour of the application of  $\text{CO}_2$ ; in 1931, 4.4 kg.

*Quantity of  $\text{CO}_2$ , distributed per square metre and per hour.* — This was 10 g. or 5.5 litres in 1930, and 6 g. or 3.3 litres in 1931.

*Determinations of  $\text{CO}_2$  in the air* made above the trial fields showed that a part of the  $\text{CO}_2$  supplied was absorbed by the plants.

*Influence of  $\text{CO}_2$  on the yields of cultivated plants.* — The control field (A) established in 1930 at 40 metres from the field receiving the  $\text{CO}_2$  (B) was in reality too near, and itself received a little of the gas. To remove this cause of inexactitude, a second control field (C) was established in 1931 separated from B by an interval of 500 metres and this safeguarded from any influence of the  $\text{CO}_2$  as distributed from the RIEDEL apparatus. The 1931 results thus enable a more exact comparison to be made. They show that, taking as equivalent to 100 the yields of the various crops obtained on the control field (C), the field supplied with  $\text{CO}_2$  (B) gave yields varying from 101 to 135, or perceptibly larger.

The root crops proved more susceptible to the action of the  $\text{CO}_2$  than the cereal crops, and among these latter, it was the oats which showed least influence.

*Influence of the  $\text{CO}_2$  on the quality of the products.* — In comparison with the controls, the cauliflower receiving the  $\text{CO}_2$  cabbaged better, with closer leaves. The cereals receiving  $\text{CO}_2$  had stronger stems, and more resistant to lodging; with the oats and rye the weight to the hl. was greater. The beets owed to the  $\text{CO}_2$  a higher proportion of dry matter.

(Prof. A. BÖMER and Dr. P. RINTELEN, Kohlensäurebegasung im Freiland, in *Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde*. Teil B, Berlin 1933. 12 Jahrgang, Heft 2, p. 49-85, 15 fig.).

T. B.

## Ecology

THE BARREN REGIONS OF THE SAHARA AND THEIR ECOLOGIC CAUSES. — The plant life of deserts — and more especially of the Sahara — has been defined as a debased steppe, interspersed with vast areas which remain for long periods, and sometimes indefinitely, entirely devoid of vegetation. Towards the middle of the Sahara there are districts where no trace of plant life can be seen for tens or even hundreds of kilometres independently of any change of seasons. In such areas the only variation in the landscape is due to the contour of the land, since the Sahara has no soil in the pedologic sense of the word.

M. Auguste CHEVALIER (*Comptes Rendus de l'Académie des Sciences*, 1932, vol. 195, No. 5, pp. 480-482) has investigated the origin of these barren tracts and reached the following conclusions:—

Contrary to what might be expected, this sterility does not appear to be due to the extreme dryness. As a matter of fact, certain species of plants are particularly well adapted to such a condition and can survive long periods of drought, growing and seeding with no moisture but that of the winter dews. On the other hand, the writer has found regions in the south of the Tonat Gourara where bushes most resistant to drought (*Zygophyllum Cestini*, various *Salsolaceae*) have succumbed during a period in which there has been practically no rain for four years, their withered skeletons remaining upright in the ground.

The sterility of the desert is due in great part, however, to edaphic rather than climatic causes. In the first place, account must be taken of the shifting sand-dunes which not only do not permit the existence of vegetation but even, in their movements, sometimes bury plants under a thick layer of sand and thus speedily destroy them, unless it should happen that the leafy extremities remain above the surface. The small sand hillocks which frequently form around hardy plants are beneficial since they facilitate budding and, during the winter, secrete the moisture which is so important to desert vegetation.

The *sebkhas* (depressions filled with salt and light soils) often constitute very extensive tracts of sterile land. Although the desert contains many salt-loving plants certain plants cannot support the saltiness of the margins of the *sebkhas* and none live actually in them. Salt-worts and glass-worts will live nearer than any other plants, forming a belt round the *sebkhas*, but these are not found farther south than the latitude of Ouargla (32° N.).

Finally, men and camels are the principal causes of the progressive impoverishment of the desert vegetation, which is bound to continue, except in the oases. The

desert is devastated by man ; in order to provide warmth in winter and to cook his food in all seasons, both the nomad and the settled inhabitant tear from the earth all the wood they can find, notably the " belbel " (*Suaeda tetragona*), the old stumps of which form excellent fuel. At the present time this plant can only be found within a radius of from 30 to 50 km. from an oasis.

The camel crops nearly all the woody growths and eats the annual plants before they have seeded. It is very unusual to find a Saharan pasture (any fertile tract in the desert being so called) which has not been so cropped at least once a year and, near the " ksours " (villages or other groups of human habitations), sheep nibble down every plant that springs up.

To sum up, the vegetation of the North African desert is of a very debased character, not only owing to climatic and even more to edaphic conditions, but also to the destructiveness of man and beast. This destructive action, which has no doubt continued for thousands of years, has largely contributed to the impoverishment of vegetation in this region : this impoverishment will continue if man does not arrest it by promoting the regeneration of certain indigenous species and attempting to acclimatise other desert plants. Before undertaking a programme of action, however, it would be advisable to make preliminary experiments for the purpose of deciding the lines on which the work should be conducted.

### Crops of Temperate Countries.

COMPOSITION OF ALASKA HAYS (*Journal of Agricultural Research*, R. C. CAPPS J. A. LE CLERC, 1 April 1933). — Investigations have been made on 51 specimens of forage plants of Alaska, as to content in moisture, ash, crude protein, fats, cellulose and sugar. The percentage of protein diminished in proportion as the season advanced.

In particular the " redtop " (*Calamagrostis* sp.) was very poor in protein after the first phases of growth. The percentage of cellulose increased in all cases in proportion as the season advanced.

The content in ash of the sedge and of the " redtop " was higher than that of the cottongrass (*Eriophorum* sp.) at all phases of its growth. The content in ash of the " redtop " was higher, at the last mowings than it was in the earlier mowings ; the reverse was the case for the cotton grass and the sedge. The proportion of fats in the sedge and the cotton grass was slightly higher than that of the redtop. The indigenous plants examined were richer in sugar (at same stage of growth) than the introduced plants, with the exception of the brome grass. The Alaska forage plants may, generally speaking, be compared with the vetch or the brome grass, but not with the yellow flowering lucerne (*Medicago falcata*).

These analyses showed that the feed value of the indigenous hays rapidly diminishes after the month of August, as a result of the diminution of the protein and the increase of cellulose. These grasses should accordingly be mown at the end of August or the beginning of September.

D. K.

PRODUCTION OF BEETROOT SEED BY THE HELP OF ELECTRIC LIGHT. — SVEN ODEN and J. RASMUSSEN have succeeded in this way in making selected beets flower and in obtaining thereby seeds in good time for the spring sowings. The beets placed in January in a greenhouse lighted by electricity have flowered so well that crossings

could be made in February and ripe seed obtained by the middle of May. The average quantity of seeds per plant was 60 g. Experiments have shown that other biennial plants can thus be transformed into annuals.

(*Facts about Sugar*, New York 1933, No. 4, p. 186).

G. S.

RE-WORKING APPLE VARIETIES. — A new method of re-working fruit trees which has been developed in Tasmania makes it possible rapidly to replace an unprofitable variety by one more suited to soil or market conditions. Instead of cutting the tree hard back to the stump the main arms are shortened back by removing a foot or two of the tip, as well as all fruit spurs and side branches. Strong growing laterals are left at intervals along the main arms. A large number of buds or scions (grafts) are then worked on to the main arms from top to bottom of the tree. The scion is inserted by slitting the bark and is carefully nailed in position with a copper tack, then the point where the union takes place is coated with a little grafting wax or similar material. Scions are also put on suitable laterals all over the tree.

When the buds or grafts begin to grow all other growths must be suppressed, and the new growths must not be allowed to grow too long before tipping. By this method the re-worked trees can be relied upon to furnish a new crop in two seasons.

This method entails a great deal of work, not only during the grafting operations in spring, but also during the growing season, as there is a heavy growth of laterals to be cut back all over the tree. It is however much quicker in yielding a crop of the new variety than the old method and there is less liability of the tree being attacked by fungus disease. It is being used with enthusiasm in Tasmania, Australia and New Zealand, particularly for apples in districts where the die-back fungus (*Polystictus versicolor*) is present.

(Rapid Method of Changing Apple Varieties, *The Fruit World of Australasia*, Melbourne, 1932, Vol. 33, Nos. 9 and 11, 1933, Vol. 34, Nos. 1 and 3).

A. M. F.

## Tropical and Sub-Tropical Crops.

THE VEGETABLE IVORY PALM IN RHODESIA (*The Rhodesia Agricultural Journal*, G. M. MACGREGOR, April 1933). — The vegetable ivory palm, or Mulala palm (*Hyphaene ventricosa*) is found in abundance on the Ngamo Flats of the Wankle districts. This region is very flat; the soil is shallow and badly drained; and there are basin like depressions. There are stretches of grass, only broken by rising ground here and there carrying low trees and shrubs. These palms are found on the sloping sides of the basin like depressions, or in the isolated groups of shrubby growth and also on the grassy tracts; they occur isolated or in groups of 60 trees at a maximum. The plant is dioecious and the fruits are borne on spadices, 5 per tree as a rule, arising from the axis of the lower leaves; on many trees however there are not more than three or four spadices. These bear up to 200 fruits each; the average number of fruits per tree is 450. The fruit when green is shaped like a tennis ball; the natives eat the spongy outer coat which rots when the fruit falls to the ground. This probably takes about two years if the natural process is accomplished. As a rule, however, the spongy coat is destroyed by outbreaks of fire during the first year leaving only the hard fibrous coat; the fruit then resembles a coconut in miniature and is difficult to open. Once opened, the

kernel is found inside and this constitutes the vegetable ivory. In the green fruit, this ivory is very soft, but it hardens on exposure to the air. The kernel is hollow and contains a liquid resembling in taste and colour the kernel of the coconut ; the shape is that of an onion and the size about 3.8 cm. wide by 2.8 cm. deep. The vegetable ivory, which is properly the endosperm, is cut from this on a thickness of about 6 mm.

The palm is about 45 feet high ; the dead leaves remain till the next flowering and those near the base are the last to fall ; these leaves are very much palmated and armed with spikes. This vegetable ivory is used in place of real ivory for making buttons and similar articles.

D. K.

EXPORT OF MANGO TO EUROPE FROM INDIA. — The problem of the importation of a number of tropical fruits into Europe has not yet been solved in a satisfactory manner. Much has however been done in the last few years towards finding better methods of packing and transport facilities for these fruits. All these initiatives are of interest as tropical fruits might have an important place in the dietary in Europe during the winter months when the supplies of fresh fruits are decidedly short ; on the other hand fruit growing on commercial lines might contribute, in many tropical and sub-tropical countries, to the solution of the economic difficulties caused by the over-production of other tropical products, such as sugar, rubber, tea, coffee, etc.

In India for the last seven years investigations have been proceeding in regard to the export of mango to Great Britain. In the opinion of the writers of the Report under examination the main factors of importance are as follows:

- (1) The selection of suitable varieties for export.
- (2) The correct maturity at the time of picking.
- (3) The right storage temperature during its transit.
- (4) The proper methods of packing the fruit.

Among the numerous varieties of mango, the Alphonso is the one selected for trial export purposes. The fruit is of the medium size for the market ; it develops an attractive blush when it ripens ; it is absolutely fibreless ; and there is a good proportion of edible matter ; it has an agreeable flavour and scent ; it has a peculiarly good storage quality. Finally it is the variety most widely cultivated in the Presidency of Bombay so that the fruit is available for exporters in a large quantity throughout the season.

The best stage of maturity for export purposes is that in which the fruit is still oily green in colour and the shoulders (or part of the fruit surrounding the stem-end) have begun to outgrow the stem-end. The fruit chosen weighs from 20 to 28 *tolas* (two and a half *tolas* making an ounce), nearly all of the same size, and great care is taken to reject all damaged fruit. Each fruit is wrapped in tissue paper ; all the available loose space is packed with wood-wool. Preference is given to trays containing one dozen of fruits instead of larger boxes, and it is found that an Indian tree, the Shevri (*Bombax Malbaricum*), yields an excellent wood for making these trays.

Cold storage transport (at about 7° C.) is essential to arrival in good condition in England. The writers do not advise sending overland from Marseilles as this is more costly. Air transport from Marseilles is also costly, and direct shipment by sea to England is the only economical method.

The following figures are quoted in the Report in respect of landing costs : direct by sea 5 to 6 annas per fruit ; from Marseilles by rail, 9 annas, 11 pies ; by Air Mail from Marseilles, 13 annas 8 pies.



The bulk of the fruit was sold in London at 15 shillings per tray which gives a fair margin of profit. Commenting on this Report it would seem that the price is too high to ensure any large consumption for the mango, as few persons would be willing to pay such a price for a fruit which is undoubtedly a delicacy but which is still little known. Now that it has proved to be practicable to transport the fruit, and for the mangoes to arrive in good condition in Europe, every effort should be made to reduce as much as possible the cost of transport.

(CHEMA G. S. and DANI P. G., Report on the Export of Mango to Europe in 1932. Department of Agriculture, Bombay 1933, *Bulletin*, No. 170 of 1932, 17 p., 14 plates).

W. B.

CULTIVATION OF THE CLOVE IN SOUTHERN INDIA. — The Director of Agriculture at Madras suggests that it would be possible to plant clove palms between the fruit trees of the already existing orchards, wherever there is a sufficiently large space, taking into account that the clove palm tends to increase in width. For new orchards, the following trees may be grouped: nutmeg, clove, mangosteen and orange. The orchard may be completed by planting papayer and plantain bananas as cover crops. If a separate cultivation of cloves is undertaken, there should be sown among the trees green manure crops, which will prevent soil erosion during the rains and will supply the cloves with a fertiliser during the dry season. *Tephrosia candida* for example may be used or one of the *Crotalaria* or even *Leucaena glauca*, provided it is cut often enough to prevent too rank a growth.

Clove palms begin to bear at the end of 10 to 15 years and are in full bearing at the end of 20 years. The average number of trees per acre should be from 100 to 150, the average yield being from 8 to 10 lbs. of cloves per tree.

The cost of a plantation of one acre amounts to about 1500 rupees for the first ten years; the upkeep costs subsequently amount to about 100 rupees per year. These figures vary naturally with the districts. Clove plants and seeds are distributed by the Fruit Experiment Station of the Department of Agriculture, at Burliar, Nilgiri District.

(Director of Agriculture at Madras, in the *Madras Agricultural Journal*, Vol. XXI, No. 2 Madras, February 1933).

J. L.

## Rural Engineering.

EFFECTIVE PROTECTION OF BUILDINGS AGAINST LIGHTNING. — It is by no means admitted that a lightning conductor installation is really a good protection against lightning. Recent experiments and general experience have shown that the region protected around a high rod of lightening conductor is more limited than used to be supposed, it includes a circle the radius of which corresponds to the height of the rod. Lightning passes through the atmosphere in accordance with physical laws of a quite special nature, and the point of entrance into the soil is only determined when quite near the earth. Hence it frequently happens that the earlier systems are not adequate for the satisfactory protection of buildings. In view of the limited protection afforded by the high rods, on the new installations the house is so to speak enclosed in a network of protection, as on all the exposed parts of the building (especially the chimneys) small conductor receivers are placed linked one with another by lines installed on the ridge

of the roof. It is further shown by experience that it is not at all necessary to have the tips of the conductor of precious metal; any metal which is a good conductor will answer the purpose. Anything metal on the roof, e. g., the gutters, should be linked into the network of conducting lines. It is not advisable to isolate the conductor against the roof itself. To lead the electricity into the earth, each installation requires at least two earth conductors. The distance of one conductor from another should not exceed 20 metres; if the circumference of a building exceeds 40 metres it is necessary to increase the number of conductors. The system of earth conductors includes not only these installations, but any natural conductors available, such as rain water pipes, water channels, etc. The natural and the artificial conductors are linked a little above the ground.

Great importance also must be attached to the passing of the electric energy from the conductor into the soil. If too great a resistance to the electric current is met with in the course of passing, it follows that the dispersal of the energy in the ground cannot take place quickly enough, and there is the risk of its passing instead from the conductor into the building. The best method for effecting the disappearance of the energy is the linking of the earth conductors to the gas and water pipes; otherwise the conductor must be carried as far as the underground layer, ending in a metal plate of 25 cm<sup>2</sup> in dimensions. It is not advisable and it is even dangerous to arrange for the end of the conductor to be in the water of a well or in an open drain of liquid manure, as is often done.

The material employed is nearly always copper or steel wire well covered with zinc. The material must be fairly strong; copper wire should be at least 8 mm. in diameter; if copper band is used it should be 2 × 25 mm.; copper rope ought to consist of seven strands of 3.4 mm. in diameter. If steel is used the measurements should be larger. It is further essential to make sure that no part of the linking is too slender or rusted, since it is at such points that the resistance is greatest, and heating up to actual incandescence may easily occur at the moment of the stroke of lightning.

(H. SCHWARZ, Wirksamer Blitzschutz, in *Deutsche Landwirtschaftliche Presse* 1933, Nr. 24 — JENENSIS, Ländlicher Blitzschutz, *Ibid.* 1932, Nr. 35).

H. J. H.

### Animal Husbandry.

THE CURING PROCESS IN RELATION TO THE FEEDING VALUE OF LUCERNE. — Experiments carried out at the Arizona Experiment Station show that the length of exposure to sunlight during the curing of lucerne has marked effect upon its content in vitamin A and vitamin D.

As compared with the vitamin A content of lucerne leaves taken from the field immediately upon cutting and dried in a well-ventilated darkened room, a 75 % loss of vitamin A occurred when the lucerne was allowed to lie on the field from 11.15 a. m. one day to 8 a. m. the next day. Lucerne severely bleached as a result of exposure to sun and rain on the field in the swathe for one week retained but 4 % of the vitamin A present in the sample cured in the dark.

On the other hand lucerne cured in the dark is deficient in antirachitic potency, as synthesis of vitamin D is shown to occur when the lucerne is exposed to sunlight during the curing process. Lucerne which was allowed to lie in the swathe for one week, during which time the sun shone 57.3 hours and 0.37 inch of rain fell, was found to be highly antirachitic.

In spite of the fact that allowing lucerne to lie on the field after cutting undoubtedly increases its calcifying properties in proportion to the length of exposure to sunshine, this does not seem a justifiable procedure from the practical standpoint because of the accompanying marked destruction of vitamin A.

(CAMMACK SMITH M. and BRIGGS I. A., The vitamin A content of alfalfa as affected by exposure to sunshine in the curing process. *Journal of Agricultural Research*, Washington 1933, Vol. 46, No. 3, pp. 229-234. The antirachitic value of alfalfa as affected by exposure to sunshine in the curing process. *Ibid.*, pp. 235-240).

A. M. F.

NEW DISTRIBUTION OF CATTLE BREEDS IN U. S. S. R. — According to Prof. W. AMSCHLER (*Deutsche Landwirtschaftliche Tierzucht*, Hannover 1933, Nr. 2), the plan for the distribution of cattle breeds in the Soviet Union includes 13 indigenous and 6 foreign breeds.

Among indigenous breeds, the most important is that of *Cholmogoren* which most resembles the black and white Dutch breed, and which inhabits the greater part of Northern European Russia. A more limited territory, adjoining the area on which the *Cholmogoren* breed are reared, has been assigned to the *Jaroslav cattle*, which are closely connected with the former breed but less improved. In White Russia and in the Ukraine, the *Red breed of White Russia* is found, resembling the Red Polish breed, and the *white-headed cattle*, derived from the Dutch Groningen breed. The best breed of indigenous cattle, according to the writer, is the *Red German cattle* assigned to the Crimea, on the territory bordering the North of the Crimea and on the plain of the Don situated to the North-West of the Caucasus and also penetrating into the Ukraine. In addition the plan includes: certain *dairy cattle* breeds, viz. the *Garbaton red cattle*, in the South-East of the industrial region of Moscow; the *Siberian cattle* an undefined collection of the different breeds of Siberia and the resulting crosses; the *small Caucasian cattle*, found on the western territories of Trans-caucasia; certain breeds for the production of *meat and milk*, viz. the *grey cattle of the Ukrainian steppe*, found on the coasts of the Black Sea and the Sea of Azov, as well as on certain parts of the «black earth» territory of the Ukraine; the *Bestuschewsky cattle*. With a view to indigenous beef cattle, the plan makes provision for the distribution of the *Kalmuck cattle* which are native to a great part of Central Asia, and of the *Kirghiz cattle*, whose natural home is the region between the lakes of Aral and Balkhash.

The *foreign breeds* for which provision is made in the Soviet plan are in particular: the *Shorthorn*, indicated for a small breeding area in the Northern Caucasus and small parts of Western Siberia; the *Hereford*, for the valley of the Middle Volga and Easter Kasalkstan. The *dairy Shorthorns* will occupy certain territories of Western Siberia, and the *black piebald Lowland cattle* (originally from Eastern Prussia) are designated for the country round Omsk, the Kusnjetzk basin, and for the Far East, on the shores of the Japan Sea. For the *Red piebald Highland cattle*, or Simmenthal, very extensive areas are indicated viz., the tract between the Ukraine and the Volga, the arid regions of Aserveidchan, all the Western and Northern Altai, and finally the territory of the Amur in the Far East. The *Brown Alpine cattle* or Schwytz breed is assigned to the whole of the mountainous part of the Northern Caucasus and to a large territory in Central Asia, viz., the mountainous Republic of the Karakirghises. Breeding animals for the two last breeds are supplied from Germany, Austria and Switzerland. The article contains a map of the distribution of the breeds.

S. T.

SHEARING OF CATTLE (*La Vie a la Campagne*, D. S. 1<sup>er</sup> mai 1933, p. 175). — The good results of shearing of cattle undergoing fattening is shown by a number of experiments; in animals so treated, during the period of fattening, there is noticeable a renewal of appetite followed by a considerable gain in weight.

The value of shearing of horses remains in dispute; but the arguments against that practice do not apply to the shearing of cattle; the respiratory needs of cattle are less important and the animals are not liable to the sudden chills experienced by sweating horses. By removing a part of the coat, it becomes easier to give cattle the necessary care in cleaning involving the proper physiological functioning of the skin, which has a remarkable effect on the appetite. Shearing takes place half way through the fattening when the appetite is flagging. After the operation, if the temperature is not high enough, the animals are kept covered for the first few days, till the organism is accustomed to the change. Care will be taken to give them plenty of litter, so as to avoid the skin being wetted while the animal is lying down.

D. K.

## Agricultural Industries.

### Industries of Plant Products.

SPONTANEOUS HEATING AND IGNITION OF HAY AND OTHER AGRICULTURAL PRODUCTS (*Science*, Dr. C. A. BROWNE, March 3, 1933; No. 1992, p. 223-229). — The intensity of heat production by plants is linked with oxygen consumption; this relation has been studied by numerous investigators. If transpiration and the radiation of heat are retarded (as when plants are heaped together in piles) the production of heat may become of importance; the maximum temperature observed in carefully conducted experiments does not usually exceed 70° C which is about the thermal death point of most of the micro-organisms; this is some 160° C lower than that necessary for combustion.

The problem is thus to explain the great difference between the death point of the thermogenic bacteria and that of spontaneous ignition. RANKE has attributed this ignition to the strong absorptive power of the hay charcoal for atmospheric oxygen; this however does not explain the origin of the heat necessary to raise the temperature of the hay to the point of carbonisation. LAUPPER supposes pyrophoric iron not pyrophoric carbon to be the causative factor; other investigators refer it to spontaneously inflammable gases, such as phosphines. In 1929 the writer made the suggestion that the spontaneous ignition was caused by the formation, through the agency of micro-organisms under anaerobic conditions, of unsaturated and unstable intermediary compounds, which if suddenly exposed to the air, absorb oxygen with so much avidity that the temperature rises rapidly to the point of ignition; spontaneous ignition may thus be instantaneous or slow according to the rapidity with which the air penetrates the interior of the stack. In other words, the micro-organisms which produce the incipient fermentation of the hay by enzyme action or otherwise, are responsible for the preparation of the compound which will later bring about the spontaneous ignition.

The splitting off of water from the organic constituents of the plants is the most usual reaction accompanying the deterioration of agricultural products and one of its effects, of great importance in the study of the problem of spontaneous ignition, is the accumulation of residues having an increasing calorific energy. A number of theories

have been advanced explaining the formation of this water as at the expense of molecules of carbohydrates (BAEYER, WOHL, NEUBERG, etc.) and in particular of sugar ; there is however in hay a large quantity of insoluble cellular materials, such as cellulose, lignin and pentosans which are not hydrolysed into sugar, but which, none the less, decompose in the anaerobic fermentation of hay by the same process of splitting off ; these cellular components undergo a continual loss of oxygen and hydrogen in the form of water, with the accumulation of unsaturated residues which become increasingly rich in carbon, so that the hay finally becomes black. It can now be readily seen that on the accidental entrance of air into the interior of the stack these unsaturated residues may quickly absorb oxygen and become heated up to the point of ignition. In a fermenting haystack the unsaturated products of decomposition are produced at comparatively low temperatures, far below those necessary for the formation of pyrophoric iron or pyrophoric carbon (theories of LAUPPER and of MIEHE).

The coincidence of all the conditions necessary to spontaneous ignition is fortunately rare ; if the hay is too damp, it will not ignite ; if it is too dry, it does not ferment. If there is a continuous circulation of air through the hay, the unsaturated intermediary compounds are oxidised as fast as they are formed and do not accumulate. The opening of a hot hay-mow is a risky operation which should be done only after taking every precaution for extinction of the conflagration that may break out suddenly. Quenching the fire with water does not do away with the danger, since the conflagration may break out again after evaporation of the water, since the oxidisable residues are still present in the mass.

Statistics have shown that spontaneous ignition of hay occurs almost exclusively in large mows and stacks : the large stack creates a better insulation against radiation of internal heat ; in addition, the exact conditions of moisture, temperature and oxygen penetration all of which are essential to spontaneous ignition, are more easily realised. When fermentation begins, there is an immediate migration of moisture from the warmer to the cooler zones of the stack ; a cool zone previously dry enough to withstand fermentation, may thus acquire, by condensation, enough moisture to become a good medium for rapid development of micro-organisms. In this way a single load of undercured hay placed in the middle of a large mass of well cured hay, may bring about fermentation of the whole mass, and at some point, this fermentation may find optimum conditions leading to ignition. If this coincidence of optimum conditions does not occur, the stack, after some months of fluctuations in temperature, cools ; the impeded penetration of the air prevents the rapid oxidation of the unstable organic residues, and when the temperature of the stack has approached that of the surrounding air, these residues are sufficiently stabilised for it to be possible to open the stack without danger.

This rapid sketch of the chemical processes involved in spontaneous ignition omits numerous details of the problem : there should be careful quantitative control of the production of heat, oxygen consumption, evolution of carbon, etc. Further research is needed on the nature of the solid, liquid and gaseous organic compounds that are produced in both the anaerobic and aerobic fermentations of hay, on the phenomena of moisture migration and heat transference in large masses of hay, and on the temperatures of ignition of hay at different stages of the fermentation processes. Once such knowledge has been acquired, a more exact idea can be formed of the complicated reactions that take place in the spontaneous heating and ignition of hay and in this way it may be possible to arrive at the best means for reducing the losses so caused.

## Industries of Live Stock Products.

PRESERVATION AND GRANULATION OF HONEY. — Farmers are usually content to sell honey in a liquid state, this being the most simple system, although there is a large demand on the market for very fine-grained honey of a firm consistency.

Many processes for the preservation of honey have been invented, but reference will only be made to those which appear to be the best. M. PUGH's investigations revealed the fact that there is no connection between the more or less advanced maturation of the honey and its tendency to ferment; the microbial flora do not influence the fermentation of the product. On the contrary it is not unusual to observe a rapid development of resistant ferments mingled with the honey on the large dextrose crystals of the clarified and granulated product. These crystals contain about 9 % of moisture and the liquid which accompanies the separated crystal contains more water than the remainder of the mass of the product. Dr. E. G. DYCE, of the Ontario Agricultural College, Canada, has made an exhaustive study of the preservation of honey and patented a process for this purpose at the Cornell University.

Various methods are proposed for preventing the fermentation of honey; storage in refrigerators, however, is not practicable for small producers, while the use of preservatives should be scrupulously avoided.

A satisfactory method is to heat the honey to a temperature of 71° C. and bottle it immediately, but the objection to this process is that the heat destroys the enzymes and vitamins. Recent investigations tend to prove that the loss of the last named constituent is of no great importance, but our opinion on this subject does not always coincide with that of M. F. PHILLIPS, as expressed in the Review *Hacienda* (New York 1932, Vol. XXVII, No. 4, p. 150-151, 2 illustrations).

It is not only the diastases and vitamins of honey which are affected by this process but — and this is still more important — the characteristic perfume and flavour of certain honeys suffer from the loss of these elements. When this is the case it is advisable to filter the honey through a SERTZ EK filter, after heating it to a temperature not exceeding 42° C. This filtration may be followed by the treatment advocated by DYCE, namely, that of sprinkling the product with very fine crystals while rapidly reducing the temperature to 14° C., at which it is maintained. By this means a very satisfactory and solid granulation takes place in from 2 to 4 days, after which the product is centrifuged and packed in boxes. It should be pointed out that slight differences of temperature of from 1 to 2 degrees seriously retard crystallization, render it defective, and cause a delay of from 5 to 6 days in the formation of the granules, the result being that the honey is of inferior quality.

In addition to the above details, it is advisable to draw attention to the importance as regards preservation, of passing the honey, at a temperature of 40-42° C., in the MASCHKAPP apparatus or the SERTZ filter, through amiante containing reduced silver; and, finally, the precipitation, by means of a suitable reducer such as formic aldehyde, of a very fine layer of silver in the packings of the product, whether glass, oiled paper, celluloid, waterproof paper, etc. It has, in fact, been proved (as, for example, in the familiar process of sterilising water by katadynisation) that the contact of silver at a normal temperature has a sterilising effect on many liquids with a tendency to ferment, such as grape must; its action tends to paralyse the enzymatic development, so that the product is preserved for a considerable time and there is no danger of fermentation.

It is evident that, from the economic and industrial, no less than from the hygienic, point of view, the practice of silvering the receptacles and filtering the honey itself through an apparatus containing precipitated silver, must be advantageous to the farmer.

G. S.

XI<sup>TH</sup> INTERNATIONAL OLIVEGROWERS' CONGRESS, LISBON, 26 November to 1 December 1933. — Names are received for registration by the Organisation Committee ("Associação Central da Agricultura Portuguesa", Largo do Chiado 8, Lisbon).

INTERNATIONAL MILK CONGRESS, ROME-MILAN, 30 April to 6 May 1934. — Names are received for registration at the headquarters of the "Federazione Internazionale Tecnici Agricoli" (F. I. T. A.), Via Vittorio Veneto 7, Rome, which is organising this Congress.

### **Agricultural Training.**

SCHOOL BUILDINGS. — In an article in the *Ingegnere* (February 1933) Prof. Carlo ROCCATELLI reviews the most recent school buildings constructed in Europe, in harmony with the trends of modern educational method.

After a reference to theories of modern pedagogy based, no longer as before on the fear of different forms of punishment, but on the conception of an active discipline, intended to develop self-control in the pupil together with the consciousness of a place to fill in the world, the writer indicates the possible collaboration of the architect in such development.

The building should be cheerful in appearance, well-proportioned, not over elaborate, well lighted and surrounded by greenery.

There is now no longer any question of forcing the pupil to remain seated for hours together, in a position which can only be injurious. The work must on the contrary be varied, with an alternation of short recreation breaks and lessons given out of doors. In rural schools the children take quite evident pleasure in cultivating the tiny plot of garden assigned to each.

Briefly, the pupil should feel so much at home in his school as to come to school with pleasure each day.

The classrooms should be spacious and either square or nearly square in shape. The former inconvenient school furniture is replaced by separate tables or desks, with modern seats, easy to keep in order and to clean.

Plans are given of recent installations in Europe, especially at Amsterdam, Uffculme (England), Frankfort, Untertutschental (Germany), Berne-Bümpliz (Switzerland), Villejuif (France).

G. R.

### **Agricultural Research.**

FRIBOURG DAIRY SCHOOL AND CANTONAL DAIRYING STATION, GRANGE-NEUVE NEAR POSEIEUX, CANTON OF FRIBOURG (SWITZERLAND). — This School, founded in 1888, is maintained by the Canton of Fribourg. The teaching staff includes 6 permanent men-

bers and 9 teachers undertaking special courses. The Director, Jules CHARDONNENS, agricultural engineer, is assisted by : 2 fully qualified teachers, 4 agricultural scientists, one veterinary expert, a jurist and three practical instructors. The Dairying Station staff consists of: an Inspector general of the dairying undertakings of the Canton of Fribourg, a master cheesemaker, an expert adviser in cheese-making, and three dairy inspectors. It is equipped with large chemical and dairy bacteriological laboratories. The activity of the Station is directed in particular towards : the microbes in the rind of Gruyere cheese — permanent supervision of milk, water and rennet — the determination of milk sugar. The results of the work of the Station are published in the periodical *Le Laitier romand*, in the *Rapport annuel de l'Ecole*, and in the *Agenda d'Industrie laitière de la Suisse romande*.

E. G.

## Forestry.

PROPOSALS FOR MEETING THE FORESTRY CRISIS IN DENMARK. — During the course of the winter 1932-33, Danish forestry found itself in a state of crisis unparalleled in the whole course of its history. Mr. HOWARD GRON has contributed to *Dansk Skovforenings Tidsskrift* (Copenhagen 1933, No. 3) a closely reasoned article in which he discusses remedial measures, many of which would appear to be of general interest.

In considering the steps to be taken to surmount the difficulties of the present situation in forestry, the writer considers that it is a great mistake to pay too much attention to policies of a public character. Private initiative should be the first to take action and undertake to carry out the changes required in order to accommodate economic life to the changed conditions. Such action should have a quasi permanent character, whereas public action should be looked on as temporary only, and undertaken in order to avoid the most grave results during the intermediate period, which must pass before private initiative succeeds in adapting industrial production and organisation to the new circumstances in consequence of the changes and adjustments which it has introduced.

The chief characteristics of the forestry crisis relate to prices and markets for forestry products and the measures adopted by private initiative must in the first place have regard to : (1) *reorganisation of selling methods*; (2) *extension of markets*; (3) *readjustment or change in the nature of production*.

The bodies engaged in sales organisation, or unions of a certain number of timber growers, should not, like the trusts, solely concern themselves with an increase in prices: as a rule they should serve the interests of the seller equally with that of the purchaser, assisting in every way to facilitate the examination of the product, the settlement of the terms of sale and the delivery of the orders. They should constantly be on the look out for new openings for trade, a matter which is quite impossible for the isolated grower, whether forest owner or forestry officer.

The extension of the market within the country depends on the discovery of new methods of utilising timber and fresh purchasers of timber products treated on old lines. Instead of continuing to produce stock materials of the old type, special attention should be paid to new requirements and also to the remarkable recent progress in modern technical methods both as regards the transformation of and the ways of utilising forest products and thus the way found of reaching new and larger groups of consumers.



Changes in the type of forest production will naturally take a long time to bring about, but, so far as Denmark is concerned, must in the first place consist in an increase of conifers at the expense of broad-leaved trees.

The State in seeking to assist forestry in distress may well consider *means of reducing costs* through modification or exemption from duties — *increase of income and marketing facilities* through temporary restrictions on imports, etc. — *the possibility of direct financial aid*.

In conclusion Mr. GRON considers that the State can fairly support the forestry world in its efforts to weather the crisis by measures which would include the following: fair measures of taxation relief — reasonable restrictions on importations from abroad — premiums on consumption so as to encourage the industrial use of wood fuel of native origin — cheap loans granted on timber stocks and cheap mortgages given for starting new industrial developments in connection with timber.

At the same time when the State cuts down the trees on its demesne lands, it should be careful as far as possible to avoid competition with its own taxpayers.

R. W.

SCOTCH PINE TAPPING IN GERMANY. — Experiments recently carried out in Germany have shewn that large quantities of resin can be obtained by tapping native Scotch pines and that this resin is quite equal in quality to the best imported resins. At the Biesenthal forest reserve under the direction of the Scientific Forestry Institute, an experimental service has been established for working this class of resin. According to Messrs H. HILF and H. LOYCKE (*Forstarchiv*, Hanover 1933, No. 9), work was begun during the summer of 1932 on an area of 75 hectares in order to provide work for the unemployed and has been continued during the present summer.

The result of these trials shows that a marketable resin can be produced with a turpentine essence content of 23 to 25 %. Biesenthal resin is very light in colour and in quality corresponds to the 13 best American kinds known as "W. W. extra".

According to the official statistics of the German Empire, there is an area of 55,000 hectares of stands available for tapping, 40,000 in Prussia and the remainder distributed in different parts of the country but mainly in Bavaria and Hesse. Reckoning for an annual yield of 500 kg. per hectare, a total annual production of 27,500 tons of resin might be expected or, in other words, 32 % of the annual normal production in Germany. In this way also 48 hours work could be given each week during 8 months in the year to 5,500 workman.

R. W.

INSTITUTE OF FOREST GENETICS IN THE UNITED STATES. — It has already been announced in these columns (see *International Review of Agriculture*, 1928, No. 12) that Mr. James G. EDDY, a well known timber-merchant, founded in 1925 at Placerville (California) a Station for the cultivation of forest trees, known as the Eddy Tree Breeding Station, for the purpose of making long term trials, the object being to discover the best varieties and to develop speedy growth combined with strength and thus to obtain the most suitable material for the reafforestation of the different regions of the United States.

According to information given in "The Timberman" (Portland, Oregon 1932, No. 5), this institution will in future be known as the Institute of Forest Genetics. The change of name will however have no influence on the character of the work, which will continue to be concentrated on the improvement of trees which make

rapid growth, special attention being also paid to their powers of resistance to the attacks of pests and diseases and to drought.

Most of the work at the Institute is with pines, as being the most important conifers and more than 100 important species and varieties are grown in the Placer-ville arboretum. This collection is the most complete in existence and is more so than that at Kew Gardens. Among hardwood trees, the chief attention is focussed on walnuts.

Specially interesting also are the progeny tests now in their third year. These tests are made for the purpose of determining the fastest growing geographical kinds and the exceptional individuals of a species. Seeds are obtained from known parent trees, planted in identical seed-beds and comparative development is observed in detail. Seedlings from 750 specimens of *Pinus ponderosa* are at present being grown in the nursery and the marked differences in their vigour testify to the importance of seed selection in any schemes for reafforestation.

Large-scale experiments in hybridisation are also being carried out and new methods for artificial pollinisation have been developed, as a result of which a number of species have been cross-fertilised successfully. An important hybrid has been obtained by Monterey pine (*Pinus radiata* Don.) with "Knobcone" pine (*Pinus attenuata* Lemm.). Students of genetics from the Universities have also co-operated in an attempt to modify inherent characteristics by X ray seed treatment.

Much of the work has now reached the point when definite results can be reported, and it is the intention of the Institute of Forest Genetics to publish a number of articles in various periodicals on these findings.

R. W.

## BOOK NOTICES (I)

### General

ISTITUTO DI STUDI ROMANI. *Le scienze fisiche e biologiche in Roma e nel Lazio*. VIII, 377 pag., 5 Fig., XXXII Tavole, Roma, 1933-XI, Casa editrice Leonardo da Vinci.

In the preface to this excellent work on the Physical and Biological Sciences in Rome and in Latium, Prof. Federico MILLOSEVICH informs us that the idea of this publication is due to himself, and that he subsequently undertook the execution under the auspices of the Institute of Roman Studies.

The chief object of this work is to trace a picture of the physical and biological environment in which Rome came into being and subsequently developed that marvellous civilisation which was to radiate throughout the world. An acquaintance with this environment does not mean merely the satisfaction of a simple curiosity, in itself legitimate; it is absolutely essential for comprehension of the historical development of Rome, first in regard to natural conditions, and then in these conditions as modified by the ordinary activities or the purposeful labour of man. In other words it is essential to be at one and the same time acquainted with the geography of the region studied, its climatology, hydrography, geology, mineralogy, botany, zoology, and anthropology.

An examination of the contents of this work will confirm this truth. All these branches of science are there to be found, each in turn treated by a specialist of high standing. First comes a study by Prof. Almagià on the *Geography of Latium*;

(1) Under this heading are included short synopses of books received for review.

then a rapid but comprehensive survey of the factors determining the *Climate of Rome* by Prof. EREDIA. After a study on the *Hydrography of Latium* by Eng. FROSINI, Eng. CLERICI, a profound student of the geological formation of Latium which he has studied in full detail for about fifty years, contributes a highly stimulating survey of the *Geology and Paleontology in Rome and in Latium*, in which he summarises the views of the various geologists who have studied the district, bringing out the characteristics of the best known of these. A logical sequence to this general geological survey is the *Agricultural Geology of Latium* on which subject, Prof. DE ANGELIS, a pioneer among students, gives a well documented study. The same author also deals with *Building Materials in Rome and in Latium* after which Professor MILLOSEVICH describes the *Minerals and Mines of Latium* and a profound study of the *Anthropology of Latium* is contributed by Prof. SERGI.

Limits of space unfortunately prevent us from describing the contents of the other chapters of this work which deserve fuller mention; it may be stated merely that they contain notes on *Botany, Zoology*, (including interesting details on malaria), *Medicine, Astronomy, Seismology, Physical and Mathematical Sciences*.

The various chapters of this book make extremely arresting reading throughout. They are packed with documentary and bibliographical details of interest and are effectively illustrated by fine plates and designs inserted in the text. The reader cannot fail to realise that the work has fully achieved its purpose and will feel gratitude to all those who have contributed to this remarkable and instructive publication.

T. B.

### Cereals.

STRILCIUC D., *Mikrophotographischer Atlas der Zerealien, einschliesslich Hirsen und Buchweizen, sowie der wichtigsten Leguminose*, 12 p. 71 Tafeln mit 284 Fig. Berlin 1932, Sonderausgabe 10 der Zeitschrift für das gesamte Getreide- und Mühlewesen.

This microphotographic atlas which it is proposed to complete at a later date is devoted exclusively to cereals (including millets, buckwheat and similar plants) and to the principal leguminous plants. By means of 71 plates, there are reproduced 284 microphotographs of preparations which will serve as material for comparative studies for all concerned with the analysis and inspection of food stuffs.

In view of the difficulties in connection with the microscopic examination of vegetable food stuffs, the author is undoubtedly to be congratulated on the execution and exceedingly careful reproduction of these excellent microphotographs, which will be useful not only to students at the outset of their studies but also to experts, since microphotography, as compared with drawing, has the inestimable advantage of objectivity. The author has been at some pains to give prominence to certain essential characteristics of the objects represented. The illustrations are in themselves so eloquent that it has been possible to dispense with explanatory text. He adds however a very valuable and exact description of the methods followed in obtaining the microscopic preparations and also of the photographic technique employed.

N. v. G.

P. BLANKENBURG, *Der Reis, Eine wirtschaftsgeographische Untersuchung*. Berlin 1933, Paul Funk, 292 p., 44 cartes, 23 illustrations.

This book on rice consists of two parts, one under the heading general, in which the author deals with the botany, the countries of origin, the history, the growing and uses of rice, the other devoted to rice in world economy.

The first part is very incomplete and it is evident that the author has not made his investigations on the spot, that is to say, in one of the principal rice growing districts. Thus, to quote only two examples, he seems to ignore the significance and great importance of the different kinds of rice. The history of the discovery of vitamins in the tissues of the husk of the grain of rice is inadequately understood.

The second part, which is purely economic, is of greater value than the first. The author divides the rice producing countries into four categories: Asiatic countries of exportation; Asiatic importing countries; non-Asiatic countries producing on a large scale; other rice growing countries throughout the world. The book contains very instructive plates and maps. The author has also attempted to give the reader an idea of the geographical, meteorological and pedological conditions obtaining in about thirty rice growing districts and of the economic conditions of their inhabitants. It is obvious that the choice of sources of information was not always easy. The author, however has done his best to consult the most recent publications.

W. B.

### Oenology.

*Kellerwirtschaft*, Dritte vermehrte und verbesserte Auflage, 132, p., 94 Fig., Wien 1933, Scholle-Verlag, Babebenrgerstrasse 5.

This is a manual of wine making for the use of vine growers, wine makers, etc. The third edition, in clear and simple language, is the production of the Committee of Experts in wine making in Lower Austria, in collaboration with the expert services of the Chamber of Agriculture, prepared from the point of view of practical requirements.

Not even the best grapes can yield a quality production unless the process of manufacturing and the methods of preparing the wine are perfect. The correct treatment enhances its reputation and consequently the possibilities of sale at home and abroad. Thus it is in the interests not only of the vine grower but also of national economy. That is why the diffusion of knowledge on the subject as attempted in this book is of vital interest.

Besides the art of wine making and wine handling there is a description of how beverages for home consumption are prepared and the uses to which by-products and residues may be put. The manual closes with a sketch of the trade usage followed for designation of wines and a summary of Austrian legislation relating to wines.

N. v. G.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

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1933

No. 9

### EDITORIAL

#### Drought.

The serious effects of the drought that has this season prevailed in a large number of the agricultural countries of the Northern Hemisphere have given a fresh impetus to the control methods designed to safeguard the various crops and the very existence of numbers of farm animals.

Passing through the regions affected, the observer cannot fail to notice the inadequacy of the means in use on the farms for combatting the drought, and the almost complete absence of plant adapted for the transport and distribution of water.

This situation cannot be attributed to the crisis. It is noticeable in a number of regions which are highly cultivated, and more especially in grassland districts, and indicates rather a regrettable resignation to the effects of a visitation against which due precautions should have been taken.

In these cases the absence of plant is the most marked feature. It would seem as though among manufacturers or engineers there had been no conception of the importance for the farming processes of the installation of practical and economical types of water containers, pumps, piping, and apparatus for spray irrigation.

The problem of irrigation works in the full sense, doubtless, needs for its solution the application of large capital and also considerable time, but this is not the case with simple spray irrigation, the extension of which from ordinary gardening to field cultivation ought to be at the present day an accomplished fact.

For certain manufactures such as that of conduits, etc. the extension of spray irrigation to large scale cultivation would provide important outlets, and it is a matter of surprise that the metallurgical industries and the manufacturers of rubber goods have not fully realised the great interest of the question.

The attention of the classes concerned may accordingly be called to the problem of drought control. It is a problem which demands in the first instance a serious and immediate effort on the part of the manufacturers of farming requisites.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

**Agricultural Research in British India (1).**

The experiment stations and other organisations concerned with the improvement of agriculture in British India are governed and maintained by the Department of Agriculture for India, the Agricultural Departments of the various States and Provinces of India, and official or private associations such as the Indian Central Cotton Committee, the Indian Tea Association and the United Planters' Association of Southern India.

## I. — IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH.

Each provincial Department of Agriculture is, as a result of its situation and its various sections of Agricultural Chemistry, Botany, Entomology, Mycology, Horticulture and Agricultural Engineering, in the best position to be able to suggest methods of propaganda and agricultural improvement which are suitable for the province and to give them effect. But the need for coordination in the research work and propaganda undertaken by these different Departments became apparent and the Imperial Council of Agricultural Research was formed to act as a centre for coordination. The Imperial Council began its activities in 1929 and has its headquarters at New Delhi.

It consists of an Advisory Board and a Governing Body.

The Advisory Board is made up of the directors of the Departments of Agriculture and Animal Husbandry of all the provinces of India and of such of the Indian States as desire to take part, of representatives of the Universities of India, of the Cooperative Societies and the Indian Central Cotton Committee and of various other persons.

The Governing Body is composed of the Directors of Agriculture of all the Provinces, 3 representatives of the Indian legislature, 2 representatives of Commerce and 2 members elected by the Advisory Board. The President is the member of the Council of the Governor General who holds the portfolio of Agriculture.

The Advisory Board presents proposals to the Governing Body, which has the right to accept or reject them. The Board also has the responsibility for the disposal of the funds of the Council, which consist of a grant and annual subsidies given by the Government of India or coming from other sources.

With a view to widening its activities the Council has formed the following committees: Sugar Committee, Locust Committee, Fertilisers Committee, Rice Sub-Committee.

(1) This article is a summary of the section on agricultural research in British India in the second edition of the monograph on *Agricultural Research in the Tropics*. The preparation of this second edition has been undertaken as result of encouragement given by Sir BHUPENDRA NATH MITRA, K.C.S.I., K.C.I.E., High Commissioner for India in London, Delegate for British India on the Permanent Committee, during the last General Assembly of the International Institute of Agriculture, which showed the interest that has been taken in the first edition of the monograph.

One of the activities of the Council consists in collecting and distributing as widely as possible information regarding agricultural matters. This is done by the three following methods: (1) by procuring facilities for Indian experts to attend imperial or international conferences on agriculture and stock breeding; (2) by financing imperial or international institutions for obtaining valuable information; (3) by its own publications, periodical or occasional.

The periodical publications are *Agriculture and Livestock in India*, the *Indian Journal of Agricultural Science* and the *Indian Journal of Veterinary Science and Animal Husbandry*.

As a result of the Imperial Council of Agricultural Research the work carried out in the various Experiment Stations directed by the Provincial Departments of Agriculture follows a single uniform plan.

## II. — IMPERIAL INSTITUTE OF AGRICULTURAL RESEARCH, PUSA

The Central Government of India, through the Department of Agriculture for India, directs and finances the Imperial Institute of Agricultural Research of Pusa.

This Institute was founded more than 25 years ago and has a world-wide reputation. It includes the following bureaux and sections:

- |                                    |                              |
|------------------------------------|------------------------------|
| (1) Governing Bureau               | (6) Entomological Section    |
| (2) Agricultural Chemistry Section | (7) Mycological Section      |
| (3) Agricultural Section           | (8) Animal Husbandry Section |
| (4) Botanical Section              | (9) Sugar Bureau             |
| (5) Bacteriological Section        |                              |

The Imperial Institute of Pusa has under its direction the following sub-stations: Karnal Farm, Bangalore Farm, Wellington Farm and the Anand Creamery. These 4 farms are under the Animal Husbandry Section and are under the Imperial Dairy Expert; there is also the Coimbatore Sub-Station under the Sugar Bureau and directed by the Secretary of the Bureau.

## III. — INDIAN CENTRAL COTTON COMMITTEE.

This Committee was formed in March 1921. The administrative council is made up as follows:—

- (1) President.
- (2) Representatives of the Departments of Agriculture of Madras, Bombay, Central Provinces and Burma.
- (3) Director General of Commercial Intelligence and Statistics.
- (4) Representatives of the Chambers of Commerce and the Associations.
- (5) Commercial representatives nominated by the provincial Governments (Central Provinces, Madras, Punjab, Bengal).
- (6) Representative of the Cooperative Bank.
- (7) Representatives of the cotton industry.
- (8) Representatives of the Indian States (Hyderabad, Baroda, Gwalior, Rajputana and Central India).
- (9) Provincial and Local Cotton Committees.

The Indian Central Cotton Committee comprises the following sub-committees:

- (a) Standing Finance Sub-Committee.
- (b) Agricultural Research Sub-Committee.
- (c) Research Students Selection Sub-Committee.
- (d) Provincial and Local Cotton Committees.

The funds at the disposal of the Indian Central Cotton Committee must be employed for the improvement and development of the culture, marketing and manufacture of cotton in India. This end is achieved by the following two methods: (1) the Committee has taken under its own direction certain branches of the activities (e. g., the Technological Laboratory); (2) it gives grants to the Departments of Agriculture of the Provinces to enable them to undertake research on certain specific problems in connection with either agricultural research or the multiplication of improved cotton varieties. The research undertaken includes selection and hybridisation to obtain new improved strains of cotton, study of the life history of certain insect parasites and means of control, study of the physiological causes of boll dropping, and rotation systems, etc.

Improved varieties are disseminated by encouraging the planting of those selected by the Departments of Agriculture. Schemes of research suggested by the Departments of Agriculture are presented by the Directors of Agriculture of the Provinces or Indian States, then must receive the approval of the Sub-Committee of Agricultural Research before being finally sanctioned by the Central Cotton Committee. The Central Committee is kept informed of the progress of the research by annual reports presented by the various officials in charge.

The Cotton Committee has under its jurisdiction 3 technical organisations: the Technological Laboratory, the Indore Institute of Plant Industry and the Ganganagar Farm.

(a) *Technological Laboratory*. — This Laboratory is situated at Bombay and is intended for research on the value of cottons for spinning.

(b) *Indore Institute of Plant Industry*. — This began work in 1924 as the Central Institute for Cotton Research. The scheme of activities includes the botanical study of cotton, and cotton physiology and genetics on the black soils of Central India. In order to make known the results obtained and to show growers how to obtain the same results, the Administration encourages growers to visit the Institute.

The experiments carried out at Indore include also other plants such as groundnuts, sugar cane, and fodder plants suitable for growing on the black soils.

(c) *Ganganagar Farm*. — The Farm is in the State of Bikaner. Work was begun in 1930 and aims at obtaining by selection and hybridisation improved types of cotton, both Indian and American. Agricultural problems are also studied, such as rotations for cotton, increase of yield by culture, irrigation, etc.

#### IV. — INDIAN TEA ASSOCIATION.

This Association supports an Experiment Station situated in the Bramaputra valley, about 16 miles from the Muga hills, near the village of Tocklai. There are 5 laboratories, a tea factory and experimental fields. Annexed to it is also an

experimental garden situated at Barbhatta, 1 ½ miles from Tocklai. The Tocklai Station is connected with the Tea Experimental Station of Godalur, the Tea Research Institute of Ceylon and the "Theeproefstation" of Buitenzorg, Java.

#### V. — UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

This Association maintains a scientific Department for each of the three plants cultivated by the members, namely, tea, rubber and coffee.

The Tea Experiment Station is situated in the Milgiri District, in the Presidency of Madras, about 38 miles from Ootacamund; it has a well-equipped laboratory, dwellings for the employés and an experimental field. The activities are similar to those of the Tocklai Station.

The Rubber Experiment Station is in the State of Travancore. It has a laboratory and an experimental field.

Experiments on coffee are carried on at the Experiment Station of the State of Mysore, which is situated at Balehonnur.

J. LEGROS.

#### Acclimatisation Experiments with Wheat in São Paulo, Brazil.

Wherever the white races have penetrated in the tropics the need for the wheat bread to which they are accustomed necessitates experiments in wheat growing on the part of the colonists. Where the experiments fail wheat or wheat flour must be imported in quantities increasing with the white population and as the natives acquire a taste for wheat bread.

Thus wheat growing in the subtropics constitutes a problem of international interest, for the exporting as for the importing countries.

The following experiments carried out by the writer at the State Agronomic Institute of São Paulo may therefore be of a certain interest also for other countries.

Before my experiments were begun in 1928, a comparative experiment with 8 different varieties had given the results shown in Table I.

TABLE I. — *Comparative trials with 8 wheat varieties.*

Varieties	Total crop per plot in kg		Yield per hectare in kg		Weight per hectolitre in kg
	Straw + Grain	Grain	Straw + Grain	Grain	
Baixo Egypto. . .	4.975 ± 0.195	1.442 ± 0.079	1906 ± 74	552 ± 30	74.0
Barletta . . . . .	0.892 ± 0.022	0.133 ± 0.008	341 ± 8	50 ± 3	68.0
Montes Clarus . .	6.767 ± 0.183	2.395 ± 0.071	2592 ± 70	917 ± 27	76.4
Hindi . . . . .	6.192 ± 0.160	1.525 ± 0.060	2372 ± 61	584 ± 22	74.4
Pusa . . . . .	5.225 ± 0.209	2.017 ± 0.078	2001 ± 80	772 ± 18	74.6
Americano . . . .	5.483 ± 0.149	0.783 ± 0.029	2100 ± 75	299 ± 11	72.6
Polysu . . . . .	6.525 ± 0.095	1.217 ± 0.210	2499 ± 36	466 ± 8	73.6
Seleção Herrmann	8.083 ± 0.265	1.567 ± 0.063	3093 ± 101	600 ± 24	76.0

Thus it appears that the yield in grain per hectare varied between 50 and 917 kg and that the early and drought resistant varieties such as the Montes

Clarus and Pusa gave the best yields. However, even a yield of 900 kg per hectare would not in Europe be considered adequate for profitable cultivation, especially as in this experiment artificial fertilisers were applied:

In Brazil, on the other hand, a yield of 1000 kg per hectare is considered as very good, which is explained by the fact that in São Paulo wheat occupies the fields during the dry season and is in consequence an intermediate crop, costing little. The best time for sowing, according to local opinion, is from the last week in April to the first days of May.

As it is required to increase the yield only by 10 %, it seemed to me possible to attain this by selection and importation of the best varieties.

Forty-seven samples imported to Rio de Janeiro by the Brazilian Ministry of Agriculture from Italy, France, Morocco, Tunisia and Algeria were sown on 10 May 1929 in an experimental field near the Institute. Of these 47 varieties only 30 germinated, only 20 developed beyond the seedling stage, and of these about half reached maturity.

The only variety that seemed to be of interest was the Hard Federation 786 which came from Tunisia and was noticeable for the number and length of the ears. Its defects were the length of its growing period and the shortness of its straw.

The results of the study of the varieties are given in Table II.

TABLE II. — *Characteristics of the varieties collected.*

Varieties	Average length of straw cm	Average length of ears cm	Average weight of ears gm	Average weight of grains per ear gm	Weight of 1000 grains gm
Hard Federation . . . . .	47	9.4	1.4	0.8	40.6
Hedba 176 . . . . .	87	8.2	2.2	0.9	41.5
Waratah 804 . . . . .	51	9.2	1.2	0.7	37.2
Pusa X Florence 386 . . . . .	58	7.8	1.6	1.2	37.5
Irakie . . . . .	52	8.1	1.8	1.2	43.1
Duri 808 . . . . .	64	9.3	2.2	1.6	49.3
Florence X Aurore 589 . . . . .	59	8.3	1.5	1.0	39.2
Florence . . . . .	60	9.4	1.8	1.3	45.0
Pusa 52 . . . . .	55	7.3	2.2	1.3	37.5
Barletta 52 . . . . .	48	11.1	0.7	0.3	18.5
Pusa local . . . . .	74	7.6	1.5	1.2	48.8
Montes Clarus . . . . .	76	7.4	1.4	1.0	51.3

Parallel with these experiments selection of the two indigenous varieties, Pusa and Montes Clarus, was begun. The criteria chosen for selection in the field were the number of ears per plant, the length of straw and length of ear. Whole plants were lifted, 468 of Montes Clarus and 566 of Pusa, and studied in the laboratory to determine the following characteristics:—

Number of stems per plant	Colour of ears
Length of straw	Number of grains per plant
Length of ear	Weight of grain per plant
Weight of ears	Weight of 1000 grains.

The data obtained by this study were collected into tables and graphs and served for the calculation of certain correlations to determine what characteristic is most closely correlated with yield, and to verify whether the correlations established in Europe are also valid under tropical conditions.

The conclusions to which these data led were as follows:—

(1) Montes Clarus is a more homogeneous variety than Pusa and bears a greater number of stems per plant;

(2) There is a marked correlation between the total length of straw per plant and the yield of grain per plant;

(3) Between the average length and the total length of straw there is a correlation only in the classes of plants having the same number of stems; the degree of this correlation decreases as the number of stems per plant increases;

(4) From a comparison of the corresponding classes of the two varieties it appears that the Montes Clarus, although giving a higher total yield, is less productive if a single class only is considered. The superiority of the total yield of the Montes Clarus is therefore due to its higher number of stems which, from the point of view of yield, outweighs the deficit in grain caused by the empty spikelets.

During the flowering period artificial crossings were made between the two varieties to obtain variations. The conclusions quoted above rendered these hybrids particularly promising since they should combine a high number of stems with full spikelets.

During this period (1929), the weather was characterised by a heavy rainfall: in February there were 600 mm of rain, and even during the following dry season there were light rains every week or fortnight. The conditions were therefore exceptionally favourable for wheat.

During the following summer (December to May) I imported a number of wheat varieties from countries with a climate similar to São Paulo or where varieties which are early maturing and drought resistant are grown.

The following is the list:—

Origin	Number of varieties
Perth (Western Australia) . . . . .	7
Tel-Aviv (Palestine) . . . . .	7
Leningrad (U. S. S. R.) . . . . .	6
Pusa (India) . . . . .	10
Tunisia . . . . .	3
Bessarabia . . . . .	3
Queensland (North East Australia) . . . . .	22
Khartoum (Sudan) . . . . .	4
Washington (United States). . . . .	35

I should like to take this opportunity of again thanking the many agricultural experiment stations for their kind collaboration.

In the following period comparative tests of the imported varieties were undertaken and a study of the descendants of the selected strains. The variety

trials were arranged in rows with 6 replications. In the progeny tests the different categories were separated according to the number of stems per plant to determine which is preferable for selection. The replications varied in this experiment from 1 to 8, according to the amount of seed available in each category. Seeding was carried out in accordance with local custom during the last week in April and the first week in May.

During the rainy season preceding the sowing the soil was enriched in humus by green manuring, and chemical fertilisers were also applied in considerable amount. The experimental field was also prepared with great care.

Two weeks after planting the first rain fell and was followed by good germination of almost all varieties. But the following period was a complete drought and totally destroyed the plants. The most resistant were the Australian varieties, but they also finally succumbed. Excepting in places where the subterranean water is close to the surface or artificial irrigation allowed a mediocre development, the wheat perished throughout the State of São Paulo wherever it was sown on a more or less large scale.

This failure seemed to me an irrefutable proof that wheat growing is impossible in São Paulo with the methods practised hitherto. I therefore determined to study again the problem of the exact time to sow and to make a trial of rust-resistant varieties during the rainy season.

In regard to this latter question the data of HURD-CARRER on the resistance of wheat to heat were compared with the meteorological data to determine whether the ill effect of the rainy season is due to the high temperatures or to overabundant moisture.

Tables III to VI require no comment.

It should be noted however that in the experiments of HURD-CARRER the temperatures were maintained constant, whereas in Table V the temperatures are the averages and maxima.

Tables II and III (HURD-CARRER) should also be compared as regards the height of the variety Hard Federation (47 cm as compared with 65 cm at 25-30°).

TABLE III. — *Data of HURD-CARRER.*

Condition of plants	Varieties	Temperature	Approximate height of plants cm
<i>Group 1:</i> Very strong. Development normal . . . . .	Hard Federation	12-18° C	130
	" "	20-25°	105
<i>Group 2:</i> Medium growth. Development irregular . . . . .	Harvest Queen	12-18°	125
	Harvest Queen	20-25°	95
<i>Group 3:</i> Development interrupted, ears sterile . . . . .	Turkey	12-18°	85
	Hard Federation	25-30°	65
<i>Group 4:</i> Development quickly interrupted . . . . .	Turkey	20-25°	65
	Harvest Queen	25-30°	45
	Turkey	25-30°	30



TABLE IV. — Days of rain at Campinas.

Month	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	Average
I. . . . .	16	20	18	13	21	25	19	11	9	18	13	17
II. . . . .	19	16	9	15	11	12	14	10	5	3	11	11
III. . . . .	12	15	5	9	7	13	13	9	9	13	14	11
IV. . . . .	11	4	11	3	4	3	7	3	6	13	2	6
V. . . . .	10	7	5	5	2	1	8	6	6	3	1	5
VI. . . . .	3	6	8	1	4	6	9	1	6	2	5	5
VII. . . . .	4	5	—	3	1	3	1	—	4	4	1	2
VIII. . . . .	1	4	8	6	2	6	3	2	—	5	4	4
IX. . . . .	8	9	3	6	3	2	12	1	6	2	7	5
X. . . . .	8	8	11	8	6	8	8	4	9	6	6	7
XI. . . . .	7	10	13	11	5	10	8	8	16	7	9	8
XII. . . . .	13	15	15	14	11	12	6	12	7	17	5	11

TABLE V. — Total monthly rainfall at Campinas (in millimetres).

Month	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1930	Average 1917-1927
I. . . . .	282.0	273.8	259.7	203.0	246.2	465.9	278.5	185.0	156.2	354.6	264.2	—	269.9
II. . . . .	211.8	152.0	135.9	182.0	184.5	286.2	318.6	129.5	52.1	146.9	335.6	—	195.9
III. . . . .	70.5	206.5	20.5	199.4	79.3	249.8	244.5	46.2	163.0	192.6	266.1	21.7	158.3
IV. . . . .	228.7	43.5	75.0	45.7	72.0	43.5	170.4	16.2	38.2	155.8	28.3	21.7	84.2
V. . . . .	102.1	41.5	41.0	17.5	18.0	10.0	66.0	63.0	72.0	32.4	2.1	19.8	42.3
VI. . . . .	21.5	31.5	208.5	7.0	41.0	104.8	128.0	20.0	60.8	44.4	58.1	21.2	69.7
VII. . . . .	8.0	48.3	—	63.1	4.0	27.0	11.6	—	35.5	146.4	7.0	22.8	31.9
VIII. . . . .	11.0	43.8	58.8	26.0	9.7	69.7	23.5	15.1	—	64.9	97.4	44.4	38.1
IX. . . . .	72.6	67.7	24.3	176.2	5.5	37.6	257.0	7.4	40.7	28.6	204.0	51.2	92.7
X. . . . .	90.6	94.8	116.5	143.0	10.7	72.7	90.7	28.1	97.3	196.4	144.3	146.5	96.8
XI. . . . .	48.0	103.5	144.2	215.4	57.6	130.0	197.0	143.2	265.4	146.8	85.8	166.3	139.7
XII. . . . .	168.0	171.3	141.4	411.6	191.1	149.0	117.7	232.5	257.3	443.0	90.5	—	124.7

TABLEAU VI. — Monthly temperatures at Campinas: (a) mean — (b) maxima (in degrees C).

Month	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	Average
I. . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 21.5 26.4	$\left. \begin{array}{l} 22.4 \\ 28.1 \end{array} \right\}$	$\left. \begin{array}{l} 21.6 \\ 26.4 \end{array} \right\}$	$\left. \begin{array}{l} 22.8 \\ 28.3 \end{array} \right\}$	$\left. \begin{array}{l} 22.0 \\ 26.1 \end{array} \right\}$	$\left. \begin{array}{l} 22.4 \\ 28.0 \end{array} \right\}$	$\left. \begin{array}{l} 21.3 \\ 26.9 \end{array} \right\}$	$\left. \begin{array}{l} 20.8 \\ 26.6 \end{array} \right\}$	$\left. \begin{array}{l} 21.9 \\ 29.0 \end{array} \right\}$	$\left. \begin{array}{l} 23.0 \\ 27.4 \end{array} \right\}$	$\left. \begin{array}{l} 22.6 \\ 27.3 \end{array} \right\}$	$\left. \begin{array}{l} 22.0 \\ 26.7 \end{array} \right\}$
II . . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 21.4 26.5	$\left. \begin{array}{l} 22.4 \\ 27.3 \end{array} \right\}$	$\left. \begin{array}{l} 22.3 \\ 27.1 \end{array} \right\}$	$\left. \begin{array}{l} 22.2 \\ 26.9 \end{array} \right\}$	$\left. \begin{array}{l} 22.8 \\ 28.5 \end{array} \right\}$	$\left. \begin{array}{l} 21.5 \\ 26.7 \end{array} \right\}$	$\left. \begin{array}{l} 21.3 \\ 26.4 \end{array} \right\}$	$\left. \begin{array}{l} 21.8 \\ 27.2 \end{array} \right\}$	$\left. \begin{array}{l} 23.8 \\ 30.4 \end{array} \right\}$	$\left. \begin{array}{l} 23.3 \\ 28.9 \end{array} \right\}$	$\left. \begin{array}{l} 22.9 \\ 27.6 \end{array} \right\}$	$\left. \begin{array}{l} 22.2 \\ 27.6 \end{array} \right\}$
III . . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 21.2 27.7	$\left. \begin{array}{l} 21.4 \\ 26.6 \end{array} \right\}$	$\left. \begin{array}{l} 21.7 \\ 27.6 \end{array} \right\}$	$\left. \begin{array}{l} 21.5 \\ 27.5 \end{array} \right\}$	$\left. \begin{array}{l} 22.5 \\ 27.7 \end{array} \right\}$	$\left. \begin{array}{l} 21.7 \\ 26.4 \end{array} \right\}$	$\left. \begin{array}{l} 20.7 \\ 26.4 \end{array} \right\}$	$\left. \begin{array}{l} 22.8 \\ 28.7 \end{array} \right\}$	$\left. \begin{array}{l} 21.8 \\ 28.6 \end{array} \right\}$	$\left. \begin{array}{l} 22.7 \\ 28.6 \end{array} \right\}$	$\left. \begin{array}{l} 22.7 \\ 27.5 \end{array} \right\}$	$\left. \begin{array}{l} 21.9 \\ 27.5 \end{array} \right\}$
IV . . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 19.1 25.0	$\left. \begin{array}{l} 20.0 \\ 25.4 \end{array} \right\}$	$\left. \begin{array}{l} 17.4 \\ 26.6 \end{array} \right\}$	$\left. \begin{array}{l} 20.5 \\ 26.2 \end{array} \right\}$	$\left. \begin{array}{l} 19.6 \\ 25.8 \end{array} \right\}$	$\left. \begin{array}{l} 21.7 \\ 25.9 \end{array} \right\}$	$\left. \begin{array}{l} 20.8 \\ 26.6 \end{array} \right\}$	$\left. \begin{array}{l} 20.9 \\ 27.2 \end{array} \right\}$	$\left. \begin{array}{l} 21.9 \\ 30.1 \end{array} \right\}$	$\left. \begin{array}{l} 20.5 \\ 25.9 \end{array} \right\}$	$\left. \begin{array}{l} 22.1 \\ 27.1 \end{array} \right\}$	$\left. \begin{array}{l} 20.4 \\ 26.5 \end{array} \right\}$
V . . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 14.9 22.3	$\left. \begin{array}{l} 18.5 \\ 24.3 \end{array} \right\}$	$\left. \begin{array}{l} 18.8 \\ 25.1 \end{array} \right\}$	$\left. \begin{array}{l} 17.5 \\ 24.2 \end{array} \right\}$	$\left. \begin{array}{l} 18.2 \\ 25.4 \end{array} \right\}$	$\left. \begin{array}{l} 18.8 \\ 24.9 \end{array} \right\}$	$\left. \begin{array}{l} 17.7 \\ 23.2 \end{array} \right\}$	$\left. \begin{array}{l} 18.7 \\ 24.6 \end{array} \right\}$	$\left. \begin{array}{l} 18.0 \\ 25.8 \end{array} \right\}$	$\left. \begin{array}{l} 17.7 \\ 23.5 \end{array} \right\}$	$\left. \begin{array}{l} 18.8 \\ 24.8 \end{array} \right\}$	$\left. \begin{array}{l} 17.9 \\ 24.3 \end{array} \right\}$
VI . . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 14.4 22.6	$\left. \begin{array}{l} 15.8 \\ 21.9 \end{array} \right\}$	$\left. \begin{array}{l} 17.3 \\ 22.8 \end{array} \right\}$	$\left. \begin{array}{l} 16.8 \\ 23.2 \end{array} \right\}$	$\left. \begin{array}{l} 16.2 \\ 22.7 \end{array} \right\}$	$\left. \begin{array}{l} 16.7 \\ 22.9 \end{array} \right\}$	$\left. \begin{array}{l} 17.4 \\ 21.6 \end{array} \right\}$	$\left. \begin{array}{l} 16.9 \\ 23.4 \end{array} \right\}$	$\left. \begin{array}{l} 14.5 \\ 23.9 \end{array} \right\}$	$\left. \begin{array}{l} 19.0 \\ 24.8 \end{array} \right\}$	$\left. \begin{array}{l} 17.0 \\ 22.4 \end{array} \right\}$	$\left. \begin{array}{l} 16.5 \\ 22.9 \end{array} \right\}$
VII. . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 15.2 21.9	$\left. \begin{array}{l} 15.2 \\ 21.2 \end{array} \right\}$	$\left. \begin{array}{l} 17.0 \\ 24.3 \end{array} \right\}$	$\left. \begin{array}{l} 17.2 \\ 23.3 \end{array} \right\}$	$\left. \begin{array}{l} 14.7 \\ 22.1 \end{array} \right\}$	$\left. \begin{array}{l} 15.6 \\ 22.1 \end{array} \right\}$	$\left. \begin{array}{l} 14.7 \\ 22.7 \end{array} \right\}$	$\left. \begin{array}{l} 16.1 \\ 23.5 \end{array} \right\}$	$\left. \begin{array}{l} 14.1 \\ 24.5 \end{array} \right\}$	$\left. \begin{array}{l} 15.9 \\ 21.9 \end{array} \right\}$	$\left. \begin{array}{l} 16.0 \\ 23.0 \end{array} \right\}$	$\left. \begin{array}{l} 15.6 \\ 22.7 \end{array} \right\}$
VIII. . . . .	$\left. \begin{array}{l} a \\ b \end{array} \right\}$ 16.2 23.7	$\left. \begin{array}{l} — \\ 25.9 \end{array} \right\}$	$\left. \begin{array}{l} 15.9 \\ 22.9 \end{array} \right\}$	$\left. \begin{array}{l} 15.3 \\ 21.8 \end{array} \right\}$	$\left. \begin{array}{l} 18.9 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 17.9 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 18.0 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 16.4 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 18.8 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 18.5 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 17.7 \\ — \end{array} \right\}$	$\left. \begin{array}{l} 17.4 \\ — \end{array} \right\}$

On the basis of these facts I consider that the cultivation of early-maturing varieties with a growing period of 100 days, such as, for example, the varieties imported from Queensland, should still be possible if sown in mid-August; harvesting would take place during the first days of December.

It is true that the December rains might constitute a serious difficulty for the harvest, but as the average rainfall for the month is 11 days, the use of reaper-binders should ensure success, particularly as the rapid evaporation allows of work in the fields even the day following rain. In any case this is only a secondary question in the cultivation problem.

For the study of this question 6 plots in chessboard arrangement were sown each week from 11 August to 9 September. The wheat germinated well and developed normally, as shown in the accompanying photograph.



Wheat growing on the experimental field.

The first and second series were harvested on 18 November in a state of complete maturity, the third on 24 November and the fourth on 1 December. The fifth was not harvested for administrative reasons.

In comparison with Table I the total crop (straw + grain) is seen to be increased by over 100 % and the grain by over 50 % in relation to the variety Pusa which was used in this experiment. This is not the highest yielding variety and it would undoubtedly be possible to increase the crop still further by using better varieties.

It may be concluded from this preliminary experiment that temperature, within given limits, has no pronounced influence on the development of wheat and that, in consequence, spring (August) sowing is preferable to winter (May) sowing.

In this experiment the weather proved to be in accordance with the meteorological forecasts as the first summer rain fell during the second week in December, after the end of the harvest.

The imported varieties were sown also in pots to allow of observations on the earliness of maturity and the resistance to rust. The Australian varieties

were found extremely early, surpassing by 7 days the indigenous varieties. The varieties Nos. 61 and 82 were completely rust resistant and promise to be of use for cross-breeding.

It is of interest to note that the hard wheat varieties (Nos. 64, 68, 92) have longer stems than the soft wheats, which may be an indication of their adaptation to local conditions.

The increase in gluten content of the imported varieties in the new conditions is also worthy of note. If the quantity of the crop is reduced, the quality of the flour is enhanced.

*Conclusions.* — From the experiments carried out on indigenous and imported varieties, as also on the climatic conditions of São Paulo, it would appear that for wheat growing to be profitable varieties should be used that are early maturing and resistant to rust and drought. The seed should be sown in mid-August for harvest at the beginning of December.

Dr. EDGAR TASCHDJIAN.

*Publications consulted :*

- 1) Relatório anual da Secção de Agronomia do Instituto Agronomico do Estado de São Paulo (1927). Inédit.
- 2) HURD-CARRER, Relation of leaf acidity to vigor in wheat grown at different temperatures. — *Journal of Agricultural Research*, Vol. 39, No. 5.

## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

**HAIL.** — It has now been proved that hail forms exclusively in large clouds of the cumulo-nimbus type which are characteristic of spring showers and summer storms, and are often grey with a copper tint when hail is about to fall. The base of the clouds may be between 700 and 1200 metres only above the ground, while the summit, which is often anvil-shaped, may reach 9000 to 10,000 m., so that they are formed of liquid water below and ice crystals above. Thus within these clouds there are very violent ascending and descending air currents, which may reach a velocity of 100 to 150 km per hour.

The ascending currents carry with them droplets of water which remain in a state of superfusion in the middle of the cloud and there split up liberating electricity. Any droplets which reach the top of the cloud come in contact with the crystals of ice and themselves immediately become frozen into sleet which forms the kernels of hailstones. The hailstones then begin to fall, but very slowly owing to the resistance offered by the ascending air currents, the maximum speed of which is reached at an altitude of about 4000 metres. During this slow fall the hailstones increase continuously in volume by contact with the droplets of water in superfusion.

If the ascending current is rapid (as is the case in very moist, super-heated air close to the ground), the droplets of water are split up in great numbers, producing much electricity, and the hailstones remain for a long time in the superfused mass and become very large. The electric manifestations are then intense and the hail storms disastrous.

With an ascending current of moderate velocity (air moist but not super-heated) the phenomena are of less importance.

With a slowly ascending current (air neither moist nor hot) the storm is slight and the hailstones are small and reach the ground more or less melted. \*

The formation of storms and of hail thus depends on the strength of the ascending currents. These theories explain well the origin of hail but leave unexplained the detail of what takes place within the cumulo-nimbus cloud, which is not yet known. The systematic study of these clouds remains to be undertaken but it is definitely proved that the so-called hail preventing rockets, which rarely exceed 1000 m. in height, are incapable of acting effectively on cloud masses of several hundreds of cubic kilometres, containing in suspension tons of ice and water in superfusion. The fact therefore cannot be disguised that the present means of hail control are powerless either to convert hailstones into rain or to prevent them from falling, so that for the farmer the only wise course is to resort to insurance against hail.

But for this official help is necessary, and all the more as in recent years, in France for example, the damage caused by hail has been enormous (over 420 million francs' worth in 1927 and over 340 million in 1928) and has thus claimed the attention of Parliament, which, happily, has shown a practical interest in hail insurance.

Unfortunately the exact distribution of hail storms in France is not yet known, and the insurance premiums will be able to be based on accurate scientific data only when each commune has a voluntary correspondent of the National Meteorological Office who will report on the hail storms occurring in his commune, for hail is essentially a phenomenon of *local* nature.

In view of the inaccuracy of our knowledge of what takes place within the cumulo-nimbus and the inadequate system of hail observation posts, the French National Crop Protection League has recently created a Committee for Hail Studies, which is formed of scientists studying the phenomena of hail, farmers who suffer from the effects of hail, insurance companies desirous of obtaining certain bases for establishing their policies and promoters of hail protection organisations.

This Committee has formed a certain number of Commissions, the more important of which study : — the upper atmosphere (soundings in cumulo-nimbus clouds) — atmospheric electricity (its rôle in hail formation and in the location of hail storms) — statistics (of regional frequency of hail) — the physiological effects of hail. It is to be hoped that the Committee will soon receive from the public authorities the necessary financial and other indispensable means to enable it to carry out effectively the useful work it has undertaken. (Joseph SANSON, *La grêle, La Vie agricole et rurale*, Paris 1932, n. 34, p. 125-127, 2 tabl.).

T. B.

### Soil Science.

NATURE OF THE ORGANIC NITROGEN COMPOUNDS OF THE SOIL. — A series of important studies on this subject have been carried out at the Rothamsted Experimental Station by R. P. HOBSON and H. J. PAGE and published in the *Journal of Agricultural Science*. Among the more recent and more particularly interesting of these studies are Nos. VII and VIII which concern respectively the "humic" and "non humic" nitrogen of the soil. The summary of the results given in these two papers is quoted below.

(A) *Humic nitrogen* (1). The nitrogen contained in purified preparations of humic acid obtained from Rothamsted soils cannot be eliminated by methods which would be expected to remove simple nitrogenous impurities.

(2) The distribution of the nitrogen in the products of hydrolysis of these preparations of humic acid by hydrochloric acid, as determined by the VAN SLYKE method, is similar to that found in the hydrolysates of proteins.

(3) A mixture of egg albumen and artificial humic acid from lignin resembles soil humic acid in regard to the effect of various methods of treatment on its nitrogen content. In both cases, the greater part of the nitrogen is not removed by the action of proteoclastic enzymes.

(4) The results obtained are compatible with the hypothesis that soil humic acid containing nitrogen consists of a complex composed of non-nitrogenous humic acid and protein, and that the manner of association is more intimate than that involved in the formation of a colloidal "salt" by the mutual precipitation, in acid solution, of a negatively charged acidic colloid (humic acid) and positively charged protein on the basic side of its iso-electric point.

(B) *Non-humic nitrogen*. — (1) From an examination of the compounds remaining in solution when humic matter is removed from alkaline extracts of Rothamsted soils by acidification, it is concluded that 30-40 % of the non-humic nitrogen is present in the form of peptides (proteoses, peptones and polypeptides), with 5 % of free amino nitrogen and 12 % of ammonia. The peptides are largely colloidal, and precipitated by basic lead acetate and by phosphotungstic acid. The remaining 40-50 % of the non-humic nitrogen is mainly precipitated by basic lead acetate and is mainly non-basic.

(2) The non-humic nitrogen compounds are thought to be incorporated in the humic-clay gel so that for the most part they go into solution only in solvents which dissolve the humic matter.

(R. P. HOBSON & H. J. PAGE. — Studies on the carbon and nitrogen cycles in the soil: VII. The nature of the organic nitrogen compounds of the soil "Humic" Nitrogen. *The Journal of Agricultural Science*, London, 1932, Vol. XXII, Part. 3, p. 497-515-VIII. «Non-humic» Nitrogen. *Ibid.* p. 516-526).

### Fertilisers and Fertilising.

HYGROSCOPICITY OF CHEMICAL FERTILISERS AND ITS EFFECTS. — It is a recognised fact that it is important to spread fertilisers as regularly as possible to ensure the full success of the crops and that it is as necessary to distribute fertilisers well as it is to distribute seed well. A fertiliser can be distributed well only if it is dry and powdery. The quality of the spreader machine is certainly also important, more particularly in regard to its regulation, but the chief essential is that the fertiliser should be neither glutinous nor lumpy. In short, the satisfactory spreading of a fertiliser depends primarily on its physical qualities and to a large extent also on the degree of moisture in the air; that is, it is an inverse function of its hygroscopicity, or power of absorbing atmospheric moisture.

All the soluble fertiliser salts are hygroscopic, but in degree varying according to their nature and to the way in which they are mixed to form compound fertilisers. It is hygroscopicity which makes the salts and salt mixtures sticky and difficult to spread satisfactorily, then, if drought follows, the water absorbed is lost and they form into masses which it is impossible to spread.

In a series of experiments MM. LENGLEN and MILHET have studied the behaviour of simple and compound fertilisers in relation to the humidity of the air. Ten grams of a salt or salt mixture were exposed to the air in a chamber, the atmosphere of which was constantly renewed. Each day (or twice a day in the case of appreciable variation) the variations in pressure, temperature and hygrometric degree were recorded, as also those in weight.

The results, which were presented at the last Congress of the Society of Industrial Chemistry, lead to the following conclusions :

(1) All the soluble salts without exception are hygroscopic, but in very varying degree. A knowledge of the greater or lesser hygroscopicity of a salt or salt mixture is useful in showing the conditions for satisfactory storage and spreading.

(2) Certain salts which alone are only slightly hygroscopic acquire high hygroscopicity when mixed ; such is the case with urea, ammonium sulphate, superphosphate, potassium chloride and sodium nitrate. A mixture consisting of 10 parts of  $\text{NaNO}_3$ , 10 of ammonium sulphate, 60 of super and 20 of KCl absorbs about 30 % of water, whereas individually these salts absorb respectively 7, 0.5, 2.5 3.5 % of water. In this case it would appear that the increased hygroscopicity is due mainly to the potassium chloride.

This behaviour of mixed salts is of great practical importance in view of the increasing use of compound fertilisers.

(3) Granulation and the addition of an insoluble body (calcium carbonate or precipitated phosphate) seem to increase the resistance of salts and salt mixtures to hygroscopicity and lump-forming, which fact is of considerable importance for the compound fertiliser industry.

With grains not exceeding 3 mm. it is possible to obtain satisfactory spreading and to avoid the drawbacks of hygroscopicity.

The following Table summarises the facts relating to the hygroscopicity of the principle fertilisers.

Fertiliser	Absorption of water at different hygrometric degrees of the air
Superphosphate . . .	Below 83° absorbs little water Above 83° may absorb 2.5 %
Ammonium sulphate .	Absorbs little water even above 83°
Sodium nitrate . . .	Between 77 and 80° absorbs 1 % Between 80 and 83° absorbs 1.5 % Above 83° absorbs up to 7 % in 4 days Granulated, same behaviour but maximum absorption only 4 %
Calcium nitrate . . .	Very hygroscopic, absorbs even below 75° Between 75 and 80° absorbs 1.5 % in 24 hours Between 83 and 91° absorbs up to 6 % per day
Sylvinit . . . . .	Between 80 and 83° absorbs 1.5 % Between 83 and 91° absorbs 6 %
Potassium chloride .	Between 83 and 91° absorbs 3.5 %
Potazote (Chloride of potassium and ammonium).	Resistant ; absorbs appreciably only above 83°
Ammonitre (Sulpho-nitrate of lime and ammonium).	Between 80 and 83° absorbs 2 to 3 % per 24 hours Between 83 and 91° absorbs 3 to 4 % per 24 hours



## Crops of Temperate Countries.

PERMEABILITY OF THE ENVELOPES OF PEAS AND WHEAT GRAINS AND THE SUCTION FORCE WITHIN THE SEEDS. (*Revue générale des Sciences pures et appliquées*, I. B., J. KISSER and H. SCHMID, 15 March 1933). — The permeability of the envelope of seeds plays an important part in the phenomena of germination. There is a direct correlation between the specific weight of the seeds and the total quantity of water absorbed. The speed of swelling, on the other hand, is inversely related to the size of the seed. The swelling of the envelope of the pea is practically completed within a few hours. Absorption of water by *Triticum* grains is much slower than in *Pisum*, which is explained by the higher content in starch and lower in albuminoids. In spite of the differences in the processes of swelling in *Triticum* and *Pisum*, the writers have not been able to draw any definite conclusions with regard to the resistance of the seed envelopes to filtration. They determined the relative permeability to water by utilising the envelopes as diffusion membranes in special apparatus, and found that it is 10 to 12 times higher in *Pisum* than in *Triticum*; peas show no polar permeability whereas this is very marked in *Triticum*. Determination of the force of suction within the seeds showed that they vary about 1000 atmospheres. The values found for peas reveal special characteristics of the different varieties, which are so marked that they allow of distinguishing not only the different varieties but also the products of hybridisation.

D. K.

SULPHURIC ACID TREATMENT OF SUGAR BEET SEED. — Experiments carried out at the Cambridge (England) School of Agriculture in 1931 and 1932 have shown that treatment of sugar beet seed with sulphuric acid is definitely beneficial, resulting in an increase of 8 % in the crop. Any additional expense is more than covered by the value of the extra yield of tops alone.

(*The Journal of the Ministry of Agriculture*, London, February 1933, No. 11).

G. S.

EXTENSION OF WHEAT GROWING IN NORTH AMERICA. — The colonists seeking land to purchase in North America during last century found themselves obliged to push further and further west and carried wheat cultivation with them. The extension of wheat growing over vast areas of the Great Plains was facilitated by the invention of new machinery making possible cultivation on a large scale with little labour. It took still further development as the value of the hard wheat produced in the Great Plains area came to be recognised by the milling industry. When other crops began to compete with grain, wheat growing was carried further towards the north and north-west.

The continual extension of wheat growing into new regions is rendered possible primarily as a result of the creation of new varieties. In 1900 A. CARLETON established the varietal characteristics necessary for successful wheat growing in the different regions of the United States and Canada. On the basis of his work American plant breeders have created varieties that are early maturing, resistant to cold and to rust.

Thus it has been possible to extend the growing of autumn wheat to more northern regions, replacing the less profitable spring wheats. In 40 years autumn wheat has been carried 250 km further north. Spring wheat, in its turn, has also been carried further north by the creation of earlier varieties. The early varieties moreover considerably reduce the risks of short wheat culture in districts liable to early rust and drought.

No new wheat variety has made the rapid progress achieved by Marquis wheat. In 1915, 6 years after its appearance in Canada, it had covered 90% of the area planted

with spring wheat, in addition to a new zone 300 km in width further towards the north. In 1926 the new Garnet variety entered into competition, this variety ripening 5-7 days earlier than the Marquis and thus allowing of cultivation 200 km still further north. Then in 1929 the Reward wheat made its appearance ; this is equal to Garnet in earliness of ripening while surpassing it in quality and in resistance to lodging. For resistance to black rust, which is of the greatest importance over vast zones of America, new varieties have been obtained from a cross between *Triticum vulgare* and *T. durum*. These are being multiplied in bulk and there is every reason to think that they will make the conquest of the spring wheat zones.

A comparison of the limits of autumn wheat growing in Europe and America shows that in America regions having an average temperature of 12° in December. January and February still allow of wheat growing, whereas in Europe the limit is between 3° and 5° C. Spring wheat is grown with lower July temperatures in Europe than in America. The northern limit of agriculture in Europe is about 1100 km further north than in America. The low summer temperatures corresponding to this extension towards the north are counterbalanced by a longer duration of the time free from frost ; in fact, the extreme northern regions of spring wheat growing in America have 90 to 100 days without frost, as compared with 110 to 120 in the corresponding regions in Europe.

(HARIG G., Wirtschaftliche und biologische Grundlagen für die Verlagerung der Weizenanbaubetriebe in Nordamerika. — *Kühn - Archiv*, Berlin, 1932, Bd. 33, p. 123-192).  
N. v. G.

ANALYSIS OF YIELD IN OAT VARIETIES IN THE UNITED STATES. — Since yield is a complex character, it seems advisable for the plant breeder to attempt to analyse it into its constituent parts and learn how these are inherited. A yield analysis of 20 varieties of oats was made by R. E. FORE & C. M. WOODWORTH (Urbana) in order to determine the relations existing between yield and the yield components. Correlations were calculated between yield per plant and 12 characters influencing yield such as : tillers per plant, panicles per plant, yield per panicle, percent of sterile spikelets, average seed weight, etc. It is believed that the relations found among the characters studied are genetic in nature. Therefore, it would be expected that characters closely correlated would exhibit a tendency to be inherited together. Between such characters as number of panicles per plant and yield per panicle, a high positive correlation would be desirable. In this case, a high correlation would indicate that some varieties now in existence are high for both characters, and hence this particular combination would not have to be produced by crossing. For certain characters, such as percent of sterile spikelets and number of panicles per plant, a high negative correlation would be desirable, as it would indicate that some varieties are low in sterility and high in number of panicles.

Yield per plant shows a high correlation with only two characters : number of whorls per plant and number of branches per plant. Small but significant correlations were also found between yield per plant and number of panicles per plant and number of branches per whorl. Other significant correlations found are the following : tillers per plant and panicles per plant, panicles per plant and whorls per plant, yield per panicle and percent of sterile spikelets, etc. Significant negative correlations were found between e. g. the following characters : panicles per plant and yield per panicle, panicle per plant and percent of sterile spikelets.

From the plant breeder's standpoint some of these correlations are of considerable interest.

(*Journal of the American Society of Agronomy*, Geneva, N. Y., March 1933, p. 190).  
N. G.

## Tropical and Subtropical Agriculture.

THE SAGO PALM IN THE MOLUCCA ISLANDS. — The products of the sago palm constitute the chief food of the inhabitants of the Moluccas. They take the place of rice, which is the staple food of most peoples in the Far East.

Sago palms are found growing wild in most of the Molucca Islands, forming part of the marsh vegetation. The island of Ceram provides the greatest quantity of sago palms. For the most part the people of these islands are content with the easy exploitation of the forests, and it is rare to find plantations.

The sago palms are various species of the genus *Metroxylon* (*M. sylvestre*, *M. Rumphii*, *M. Sagus*, *M. longispinum*). When they have attained their full growth of about 25 metres a large terminal inflorescence forms. The developing fruits consume the whole of the starch contained in the pith of the trunk. Thus the trunk becomes hollow and the tree soon dies. Numerous suckers form, however, at the base and the tree is soon replaced by several young palms. In this way the number of wild sago palms does not diminish but tends rather to increase.

New plantations of sago palms are made by simply planting the suckers in marshy soil. But not until 12 to 18 years after planting is the tree ready to be cut down for the collection of the sago. To test whether the stem is mature holes are made for taking samples of the pith.

The harvesting of the sago is simple and requires little labour. First a space is cleared round the tree, which takes 20 minutes; then the felling of the tree requires 40 minutes. The trunk is cut lengthways into two halves to obtain the sago. As it is necessary to avoid the drying of the pith it is usual to cut at one time only as much as can be worked in a day; for the same reason the exposed section is covered over with a roof of sago palm leaves. The fresh pith is pink, but later turns brownish. The pith is removed from the trunk, then ground and pressed. The natives of the Moluccas have evolved a crusher which serves for the different operations. The mass thus obtained is then thoroughly kneaded in a basin, passed through a sieve, then left for one night to form into a fine powdery paste. The paste is then put into baskets from which the water is allowed to drip for a short time. All the basins, sieves and baskets used are made with materials obtained from the stem, leaves, etc. of the sago palm. The same applies to the baskets in which the meal is sold.

The writers of the first work quoted have calculated the costs and returns of the sago grower. They analysed the work required for the felling of the tree and for the preparation of the 22 baskets of sago which one tree yields. The results show a gain of 6 Dutch cents per hour of work.

For consumption sago is used in two forms: a sort of broth (« papeda ») and sago loaves (« sagolempeng »). The broth is taken hot or cold. The loaves are baked in small clay ovens and undergo no fermentation and keep indefinitely.

Granulated sago is made only for local consumption. It keeps badly in the damp climate of the Moluccas and requires to be packed in airtight containers (e. g., mineral water bottles).

The debris of the felled palms and the waste from making sago also contribute to the food of the natives, for the former are used to feed the edible larvae of a large beetle, *Rhynchophorus ferrugineus*, and the latter form an excellent bed for growing edible fungi.

The leaves of the sago palm are the only roofing material used, and the dried petioles are valuable for building the walls of the houses. The sago baskets are also made with the leaves of this invaluable palm.

This all shows what a large part is played by the sago palm in these islands, supplying the food and the main building materials of the natives. Thus life is very simple in the Moluccas. Agriculture is practically unknown. The natives allow migrants from Boeton (Celebes) to fell the forest and cultivate mountain rice, ground-nuts or cassava, on the condition that before they leave the land they plant coconut palms, nutmegs, cloves or other fruit trees.

Every two or three months the natives spend a week extracting sago from the pith; the rest of the time they collect nutmegs, coconuts or other fruits in the abandoned fields and search for cassava and vegetables. In the afternoon they repair their fishing nets, for they fish only at night. Hunting of deer and wild boar enriches the daily menu.

Breeding of large stock is unknown. In the Christian villages there are pigs and in the Mohammedan villages goats.

Sago thus forms the basis of the food of the people. The daily consumption of sago per head is 400 to 600 grams. It is often stated that it is an inadequate food and Prof. DONATH has in fact demonstrated that the content of sago in albumin, fat, vitamins *A*, *B* and *C*, and salts is extremely low. The natives however give the impression of belonging to a strong and healthy race, with the exception of the inhabitants of a few small towns. The explanation is to be found in the presence of other sources of food, such as fish, which is abundant, and vegetables and *Canarium* nuts which supply the necessary vitamins.

(H. DEINUM and L. SETIJOSO, Producten van den Sagopalm, *Landbouw*, Buitenzorg, 1932, 8ste jaargang, 3, p. 105-142, 22 fig. W. F. DONATH, Enkele korteopmerkingen omtrent de voedingwaarde van sago, *Ibid*, p. 142-145).

W. B.

MANURING OF COCONUT PALMS IN NEW CALEDONIA. — The coconut is one of the plants which benefits most obviously from manuring. The mean annual production, for example, can be increased from 25 nuts to 40 or even 60 after a few years of fertilisation. Manure is required as soon as the first spathes and the first fruits appear. According to M. LEPINE, the quantity of materials extracted each year from the soil by a plantation of 156 coconuts (covering an area of 1 hectare) is as follows (in kilograms):

Mineral substances	Roots	Trunk	Leaves	Fibre and Peduncles	Spathes and Fruits fallen before maturity	Total
Sodium chloride . . . . .	0.093	14.604	21.403	3.042	20.051	59.193
Potash salts . . . . .	0.702	51.480	82.707	16.931	212.581	364.401
Calcium phosphate . . . . .	0.098	3.369	200.070	4.714	13.595	221.836
Calcium salts . . . . .	0.317	10.485	92.149	2.273	53.266	158.490
Magnesium salts . . . . .	—	—	—	2.074	—	2.074
Silica . . . . .	0.035	0.374	24.362	1.359	6.383	32.513
Total . . . . .	1.245	80.312	420.691	30.383	306.876	838.507

These figures give accurate indications of the substances composing the coconut palm, but all these return to the soil except what is removed in the kernel of the

nut. It is by the composition of the kernel that fertilisation must be guided. According to the results of certain analyses the ash of the kernel is composed mainly of potassium chloride (45.84 %), phosphoric acid (20.33 %) and sodium chloride (13.04 %). The other components are of only secondary importance. Thus it appears that the coconut requires mainly potash; twice as much as is required of phosphoric acid and common salt, which are also necessary. In the lime-rich soils (emerged coral reefs) of parts of south and south-east New Caledonia potash is supplied in the form of chloride; potassium sulphate is more suitable in soils less rich in lime. Annual applications of 150 to 200 kg of chloride or sulphate of potassium are given. Nitrogen may be supplied in the form of fish meal, poultry manure or calcium cyanamide (in soils poor in lime). The necessary phosphates are given in fish meal or in Walpool guano (300 kg per palm). It is advisable to give a dressing of sea salt from time to time to coconut plantations far inland.

All these fertilisers are relatively costly in New Caledonia, and it would appear that the most economical dressing would be 40 tons of farmyard manure to the hectare.

(Ch. JACQUES, *Revue Agricole de la Nouvelle-Calédonie*, November-December, 1932).

J. L.

### Agricultural Engineering.

THE COMBINE HARVESTER AND WHEAT PRODUCTION COSTS IN NORTH AMERICA. — With a view to studying the actual conditions of wheat production in America and their contribution to the present crisis, M. A. HÜHNI, of the Secretariat of the Swiss Peasants, has made a thorough investigation of the use of the combine in North America, the results of which are published in the *Annuaire agricole de la Suisse* (Berne, 1933, Fasc. 4). The information on the costs of harvesting and thrashing with the reaper-binder and separate thrasher indicate a rate of 21.50 francs per hectare. This signifies that in spite of the low prices of the products, in certain conditions of semi-arid climate and wide areas, the combine harvester still allows of a profit. This is one of the reasons why countries with inferior conditions of climate and extent are now in a state of crisis. The crisis is not temporary but is a fundamental matter which will continue so long as all the means offered by modern progress in technique are not utilised to the full.

VEGETABLE CARBURANTS. — In 1932 M. Charles ROUX undertook for the Ministry of the French Colonies a study and experiments in connexion with African fuels and carburants of vegetable origin in French East and Equatorial Africa. As a result of his studies M. ROUX has been able to prove that it is entirely possible to obtain solid, liquid and gaseous fuels and carburants by the use solely of the indigenous alcohol and oil yielding raw materials of plant origin which exist in large quantities in the natural state and are also capable of being produced in great bulk by cultivation.

M. ROUX and his collaborator, M. LARGNIER, have tested nearly all the oleaginous seeds and nuts and found that all yield by carbonisation at low temperature a crude petrol from which can be extracted by rectification and refining, light spirit, heavy spirit, lamp oil, gas oil and fuel oil, while the solid residue from carbonisation furnishes an excellent charcoal similar to wood charcoal. It was also found that with the usual technique a large quantity of ammonia is present in the residual liquids. The average yield per ton of the seeds and nuts tested may be calculated as follows: 200-300 kg of charcoal, 200-300 litres of liquid fuels and carburants and 10-15 litres of ammonia.

The industrial application of the results of these experiments may be predicted in the less accessible parts of Africa and would result in the products being more economical in these zones than the imported products.

The tests have shown the fuels and carburants to be identical with those obtained by similar treatment of oil or petrol. Industrially produced therefore they would be interchangeable with those of mineral origin.

(ROUX A. Ch., Les Combustibles et Carburants africains, *Revue internationale des produits coloniaux*, Paris, December 1932, and *Le Génie Rural*, Paris, June 1933).

VENTILATION OF COWSHEDS. — A number of comparative experiments carried out on the dairy farms supplying the city of Montreal, Canada, showed that the new modified system of KING ventilation with a single chimney ensures better ventilation while reducing the costs of installation by about a third as compared with the old KING and RUTHERFORD systems with many chimneys.

(*Scientific Agriculture*, Ottawa, April 1933, No. 8).

G. S.

## Animal Husbandry.

### Livestock Hygiene.

IMPORTANCE OF "POLISAN" IN STOCK BREEDING. — In the periodical cited below M. JAN BECKA describes the highly beneficial results given by "polysan" (colloidal magnesium hydrate) in some experiments carried out over a period of 6 years on farm animals in Czechoslovakia. Polysan stimulates physiological resistance in the organism, opposes acidosis, causes rapid regeneration of the cells and checks the development of bacteria and pathogenic cells.

The use of polysan gave a new vigour to the animals and induced special resistance to the attack and development of certain diseases, such as tuberculosis, rickets, anthrax, etc. (*Věstník Československé Akademie Zemědělské*, Praha, 1933, No. 4).

### Feeding and Feedstuffs.

COMPARATIVE GROWTH PROMOTING VALUE OF VARIOUS PROTEIN FEEDS. — In spite of the amount of research that has been carried out on this subject it is not yet possible to assign a definite characteristic coefficient to each of the protein feeds.

F. FERRINI and SIMONE VALLA have taken up the question with a view to obtaining accurate information regarding the quality of the proteins contained in each foodstuff. Young pigs weighing about 15 kg were used for the experiments and 18 different feeds.

The test covered 5 periods of about a week, during which the rations contained always the same amount of nitrogen and were rich in glucides (150 calories approximately), salts and vitamins. The periods differed only in the nature of the nitrogen-containing elements: skim milk in the first and third periods and one of the substances under study in the second.

Calculations were made of:— (1) the coefficient of digestibility ( $N \text{ absorbed}/N \text{ ingested} \times 100$ ) — (2) coefficient of retention ( $N \text{ retained}/N \text{ absorbed} \times 100$ ) — (3) coefficient of practical utilisation ( $N \text{ retained}/N \text{ ingested} \times 100$ ).

The results obtained, expressed in tabular form, make it possible to draw a number of conclusions, the chief of which are as follows:—

(1) The purchase and use of a protein feed for livestock must be based on the proportion of proteins that the organism is capable of utilising for the renewal of its tissues. The utilisation of nitrogen may vary in the ratio of 1 to 3.

(2) A mixture of skim milk and starch (e.g., cassava) supplemented by the necessary mineral substances and vitamins constitutes the optimum growing ration.

(3) Among protein feeds, the total albumins of milk and casein give the best results. Among the cereals, barley shows a marked superiority; wheat is mediocre. The proteins of wholemeal wheat flour (Graham meal) were found greatly superior to those of more refined flours. The lower digestibility of Graham flour in comparison with refined flour, which is due to its higher content in inert substances, is far from counterbalancing the advantages conferred by the better utilisation of its proteins in the metabolism of the animal. The luxury flours have the lowest nutritive value.

(4) The proteins of the Leguminosae, as those of the cereals, show marked variations in the coefficients of utilisation and retention of the nitrogen. Those that are worthy of consideration are soya bean and groundnut meals, the proteins of which have an equal growth-promoting value to those of wholemeal flour.

(*Comptes rendus de l'Académie des Sciences*, Paris 1933, tome 196, No. 4).

G. S.

**NUTRITIVE VALUE OF PROTEINS OF LEGUMINOUS SEEDS.** — A number of feeding experiments carried out on rats by Prof. S. BAGLIONI (University of Rome) have shown that the lack of wheat protein may be corrected, qualitatively and quantitatively, by the addition of the protein constituents of seeds of Leguminosae such as *Cicer arietinum* (chick pea), *Lathyrus sativus* (jarosse), *Ervum Lens* (lentil) and *Vicia Faba* (broad bean). According to the writer the food value of the proteins of these plants may be considered as equal to that of casein.

(*Atti della Reale Accademia Nazionale dei Lincei*, Roma, March 1933, No. 6).

G. S.

#### Other Animals.

**SNAIL FARMING.** — Breeding of edible snails should not be confused with snail penning. The latter consists solely in keeping snails which have been collected in pens for fattening purposes. Breeding requires 3 years and is practised in large enclosures with suitable conditions, avoiding overcrowding.

*Marketable edible snails.* — All molluscs of the genus *Helix* are edible. But the two varieties of interest are the "large white" and the "small grey". The large white, or Burgundy, snail measures 45 mm across the largest diameter and 35 mm in height; the shell is pale in colour. The small grey has a brownish yellow shell with a band of darker colour.

*Habits.* — Gasteropods have voracious appetites, specially during warm moist weather at night. They shun bright light and seek shady places; on cloudy days they have an insatiable appetite. Their favorite green foods are, in order of decreasing preference, lettuce, chicory, cabbage, soft leguminous fodders, nettles, beet slices and all sorts of rubbish. At the approach of winter they must be provided with a layer of moss under which they can burrow for shelter, after having closed their shells for the winter. It is in these shelters that they are caught. The edible snail is hermaphrodite; the first eggs are laid in May and these 40 or 50 hatch in June. Reproduction begins at the age of two years. For consumption they require to be three years old.

*Breeding pens.* — A snail farm must consist of a certain number of independent pens: a pen intended for the triennial production of 15 000 snails should have an acreage of about 10 ares; small mesh fencing prevents escape. As each pen must be restocked every 3 years, the land is ploughed to disinfect the ground and planted with Jerusalem artichokes for shade; winter salads and cabbages are also planted. In periods of prolonged drought the ground is watered occasionally to maintain a state of coolness.

(*L'Agriculture Nouvelle*. C. ARNOULD, 20 May 1933).

D. K.

## Agricultural Industries.

THIRD INTERNATIONAL, TECHNICAL AND CHEMICAL CONGRESS OF THE AGRICULTURAL INDUSTRIES. — This Congress will take place in Paris from 28 March to 5 April 1934 on the invitation of the French Government. The proceedings of the Congress will be divided into 21 sections, falling into the following 5 groups: (1) Scientific and economic studies — (2) Sugar manufacture — (3) Fermentation industries — (4) Food industries (milling, baking, etc.; milk, butter, cheese, fruits and vegetables industries; fats; chocolate) — (5) Associated industries (tropical industries, fertilisers, cellulose and its derivatives, carburants with a basis of alcohol).

Communications should be addressed to the General Secretariat of the Congress, 156 Boulevard de Magenta, Paris (X<sup>ème</sup>), which is responsible for the organisation and all questions relating to the Congress, and should reach the Secretariat at latest by 15 December 1933.

### Industries of Plant Products.

RECENT PROGRESS IN THE BEET SUGAR INDUSTRY. — One of the methods used for increasing the profits of the sugar factory consists in reducing the point of extraction of the cossettes and so increasing their value for stock feeding.

In the Stöbnitz sugar factory the BERGÉ diffuser-drum and the SELDIS process are used with success; a special device allows of the recuperation of the nutritive substances in solution in the liquid extract from the cossettes. M. CLAASSEN describes also the continuous carbonator of BLANKE, the quick crystallising refrigerator of KÖLZ, the BERGÉ centrifuge and the centrifuge and press for making loaf sugar from ground crystallised sugar by the GREVENBROICH system. The article is completed by diagrams, one illustrating the circulation of steam and juice, the other relating to the recovery of the heat lost.

(*Zeitschrift des Vereines Deutscher Ingenieure*, Berlin, 11 Februar 1933).

G. S.

PURIFICATION OF SUGAR BEET JUICE BY THE PROCESS OF J. ZAMARON. — From the report presented by the inventor at the last General Assembly of the Association of Chemists of the Sugar and Distillery Industries of France, it would appear that rapid and excellent defecation and filtration of beet juices to 4.5-5.5 degrees of purity may be obtained by the addition of 2 gm per litre of alumina gel and 3 gm of CaO. The mixture is heated to 83-84° and filtered immediately; filtration is followed by a double carbonatation, after which the liquid is clear and decolorised. Washing of the cakes is absolutely successful, without any sign of recoloration. The final concentration of the juices is facilitated by their high degree of fluidity and their reduced surface tension. The massecuite obtained is drier, less coloured and more readily cured. A number of trials have been carried out in the course of the 1931 and 1932 sugar season.

(*Bulletin de l'Association des Chimistes de Sucrierie et de Distillerie*, Paris, 1933, No. 4).

G. S.

DEFECATION OF JUICES BY ADDITION OF COLLOIDS. — The Industrial and Agricultural Society of the Somme has patented (E. P. 386276) a new process for the defecation of sugar juices by the addition of colloidal substances capable of producing an isoelectric liquid from which the colloidal impurities can easily be separated. Colloidal alumina, to which can if necessary be added colloidal silica and formaldehyde, are specially suitable.

(*La Sucrierie Belge*, Bruxelles, 1933, No. 16).

G. S.



**OIL, FROM SEEDS OF INDIAN FIG.** — The fruit of *Opuntia Ficus-indica* contains about 36 % of rind, 61 % of pulp and 3 to 4 % of seeds; the seeds contain 8 to 10 % of a semi-siccative oil with a specific weight of 0.929, saponification index of 189 and iodine index of 116.

The oil may be extracted as in the case of other seed oils such as tomato, for example, by submitting the pulp to a continuous pressure (EGROT and ETRANGE, OILER, etc. presses) or by using various solvents (trieline, etc.). Where the collection of a considerable quantity of seeds, as a waste product of the industrial treatment of the fruit, is possible, refined *Opuntia* oil may be successfully used, after boiling in the presence of catalysts (resinate of lead, cobalt, etc.), for the preparation of good quality varnish.

Further, the possibility of destearinating the oil and removing the linoleate by freezing would make the oil suitable for a number of other uses, including food. Voltolysed and hydrogenated *Opuntia* oil will form a good lubricant when mixed with other mineral and vegetable oils (palm oil, olive oil, castor oil, etc.).

(From various sources).

G. S.

**CHANGE OF LIPIDES OF WHEAT ON STORAGE.** — Wheat and its products were extracted with various fat solvents and the phosphorus and nitrogen contents of the extracts measured.

Under different storage conditions the amounts of extracts and their phosphorus and nitrogen showed marked variation. The changes observed are explained as being due to enzymic hydrolysis and are correlated with increasing moisture and acidity of the samples. As might be expected, the changes observed were most marked in those parts of the wheat highest in fat content and in enzymic acidity (germ and bran). Flours showed only very slight changes in the amount of the lipides extracted by various solvents and in the phosphorus and nitrogen contents of the lipides regardless of storage conditions.

The nitrogen-phosphorus ratios of all the extracts were greater than 1 to 1, indicating the presence of nitrogen-containing lipides other than lecithin.

(*Industrial and Engineering Chemistry*, Washington, 1933, Vol. 25, No. 1).

G. S.

**NEW PROCESS FOR ENSILAGE.** — M. A. MAUPAS reports a new method for ensilage which has been invented by M. ROJAHN, a chemist in Hanover.

The process consists in lining the bottom of a silo with a layer of 5 cm. of straw which is sprinkled with an inexpensive liquid called *Toro-Silon*; this slowly gives off antiseptic vapours which sterilise the plants and stop all cellular activity. For 25 tons of fodder 5 kg. of this liquid are used in a dilution of one tenth. Two trials carried out in ground pits in south west France produced, contrary to expectations, a fodder with a penetrating disagreeable odour, repulsive to stock.

Experiments by M. A. MAUPAS, however, with trefoil and cock's-foot grass in a reinforced concrete silo with a tap at the bottom, gave highly satisfactory results.

The fodder was not chopped, but was heaped on a layer of straw soaked with *Toro-Silon* and well trampled down. When the tank was full, instead of covering it over with straw, it was covered with maize leaves, then with a 50 cm. layer of soil. It is preferable to cover the silo with a light roof.

Fodders kept in tower silos by the ordinary methods are sometimes sour and evil-smelling, but those preserved by the method of sweet ensilage remained pale green and

had an agreeable odour; they were free from butyric acid and were readily taken by all animals (cattle, sheep, poultry, and even rabbits) to which they were offered.

Farmers having water-tight silos are recommended to try the system.

(*Journal d'Agriculture pratique*, Paris 1933, No. 25).

G. S.

#### Industries of Livestock Products.

DETERMINATION OF MILK FAT BY THE NEW HOYBERG METHOD. — The Dairy Control Syndicate of the Department of the Aisne, France, has during the last 3 years used the new HOYBERG process for determining the fat content of milk.

The process is as follows. Into the butyrometre tube 9.7 cc. of milk, then 6.5 cc. of the new HOYBERG liquid are introduced. The butyrometre is closed with a special rubber stopper. The tube, cork downwards, is turned until all the milk is collected with the liquid over the stopper. The tube is then briskly shaken up and down about twenty times, then, after a few transverse shakes, it is turned upside down two or three times. It is then put, cork downwards, into a water bath at a temperature of 52°. After 3 minutes it is removed and shaken vigorously backwards and forwards ten times; then it is turned so that the contents of one reservoir flow into the other, then it is shaken again 10 times as before. The butyrometre is then replaced in the water bath, cork downwards. After 3 more minutes it is removed again and turned to make the liquid flow from one reservoir into the other. It is again replaced in the bath, cork downwards. After 3 minutes the operations are again repeated. Then after a last treatment of 15 minutes in the water bath, the tube is removed and the reading taken.

(J. RATINEAU, *Revue de Zootechnie*, Paris, December, 1932).

S. T.

NEW PROCESS FOR PRESERVING LIQUID EGG BY FREEZING. — The representatives of each of the States of Australia on the Empire Marketing Board were recently present at the examination of the first lot of frozen liquid eggs transported from Australia to London in tin boxes, square in section, and stored in cold chambers.

For the preparation of this product, the eggs in the shell are examined one by one, sorted and washed. After breaking, the egg contents are collected by an electric contrivance, put into boxes and frozen. It is recommended to introduce an inert gas (nitrogen) during the operations, which are effected in a few hours.

According to all reports the preservation of these eggs is perfect and adequate in duration. The exporters from Victoria hope to introduce the product into Great Britain as a substitute for egg pulp, which is at present exclusively produced by China. New Zealand, the Union of South Africa and others of the Dominions are also hoping to put on the market large quantities of frozen eggs at different seasons.

(*Ice and Refrigerating*, London, February, 1933).

G. S.

#### Agricultural Research.

THE HANNAH DAIRY RESEARCH INSTITUTE, KIRKHILL, AYR, SCOTLAND. — This Institute was founded in 1927 and has an annual expenditure of approximately £ 5,000. The staff consists of the Director, N. C. WRIGHT, four assistants and two honorary workers. The activities of this Institute are at present directed to: the protein requirements of dairy cows, inheritance of milk yield, physiology of lactation, bovine tuberculosis, the utilisation of milk residues, the survey of existing knowledge

on condensing and drying of milk, biological research, the nutrition of dairy cattle, etc. The Institute possesses a fine herd of thirty pedigree Ayrshire cows together with two wellbred bulls and a full complement of young stock. All [the animals are tuberculin-tested, and the farm is licensed to produce Certified and Grade A (T. T.) Milk.

The Institute's results are published in its annual Report and Bulletins on particular investigations are published on completion. Other results are published in scientific journals.

Correspondence is carried on in English.

E. G.

## Forestry.

LEGISLATIVE MEASURES FOR THE PROTECTION OF THE NATIONAL PRODUCTS OF PORTUGAL. — The fact that this country is the premier exporter in Europe of posts in the unfinished state, is due to the special measures passed by the Portuguese Governments in favour of exporters, in accordance with which they have been enabled to transport their timber at prices much below those required for the transport of imported timbers. Recently, by a decree issued on 27 December 1932 (*Diário do Governo*, Ministerio do Comercio, Industria y Agricultura. Decreto no. 22,037. Productos da industria nacional) certain measures have been enacted with the object of protecting the sale of national products by facilitating to the utmost exportation and consumption. This Decree will undoubtedly have very important effects on the timber trade of Portugal.

The Decree institutes a mark which must be placed on all merchandise of national origin; in accordance with its terms the State, the public administrations, private administrations, societies and other groups benefiting from State concessions or privileges must, when possible, purchase in preference products of the national industry, if their prices are equal to those of foreign products, and, *a fortiori*, if they should be lower. Railway companies, in connection with any undertakings or purchases of fixed or rolling stock required for construction and for working of the lines, are expected to conform to this rule in all cases where the prices of national products do not exceed by more than 10 per cent. the prices of foreign products, similar or serving the same purposes.

The importation of merchandise in contravention of these measures is punishable by a fine equal to the sum paid as import duties, with a minimum of 1000 *escudos*. Fraudulent purchase of foreign products on the market is punishable by a fine equal to 20 per cent. of the value of the products, with a minimum of 200 *escudos*. Manufacturers or traders selling foreign products as national products will be liable to the same fine.

State organisations, independent administrations and administrative bodies or corporations infringing the provisions of the Decree will also be liable to these fines, which will be collected from the responsible officials.

R. W.

UNION OF FORESTRY INTERESTS AND NEW FORESTRY ENTENTE IN FRANCE. — The difficulties due to the present crisis have brought home to the representatives of communal or private forest ownership the necessity of coming to an understanding for the protection of their interests. After a meeting of the Federation of the Associations of French forest communes, held at Dijon in January 1933 which was also attended by representatives of Swiss and Belgian forestry interests, the President of the Federation succeeded in enrolling in the Federation 24 departments and nearly 6000 forestry communes.

The same necessity for safeguarding the timber and subsidiary industries has brought about the formation of a Committee, constituted under the patronage of the large organisations concerned with the consumption of timber in France. This Committee will undertake propaganda in favour of the utilisation of timber.

Recently the *Groupe forestier du Sénat* was formed, consisting of 120 members, and a *Comité interparlementaire*, including 15 Senators and 15 Deputies, which will safeguard the interests of the French forests and the French forestry industry.

Lastly, in its meeting of February 1933, the syndical Chamber of the Committee of Forests has decided to form a Committee of Co-ordination of the efforts of syndicates and federations, which will unite in one body the forest owners of the various regions of France, as well as the Federation of the Associations of the French forestry communes. This Committee, which will serve as a link between these bodies and will give a new direction to the French forestry policy, will be known as *Comité d'Entente de la Forêt Française*.

At the time of its first meeting, this *Comité d'Entente* addressed to the Minister of Agriculture and to the Presidents of the forestry groups of the Senate and the Chamber of Deputies a letter in which, after a full statement of the general situation of the forestry interests of the country, the following requests were made: (1) for the international agreements essential to the re-establishment of the normal exports of French timber; (2) in the meanwhile the reduction of the quotas of foreign timbers admissible into France and their limitation to only the kinds which cannot be produced in sufficient quantities in France and her colonies; (3) completion of customs protection against foreign timbers by the fixation at 80 francs per ton, without distinction of categories, of the tax on the timber import permits; (4) the protection of the paper industry as based on the national supply of wood material. The letter went on to specify the measures considered essential for this protection, such as: raising of the tax on imports of wood cellulose pulps — raising of the duties on import of unbleached pulps treated with bisulphide and soda, bleached pulps and mechanical pulps — raising of the duties on papers — revision of an article in a law, etc.).

(*Bulletin du Comité des Forêts*, Paris, 1933, No. 54).

R. W.

**THE SUGAR MAPLE.** — This tree (*Acer saccharinum* Marshall), known in English as the "sugar maple", grows as an indigenous tree throughout the United States of America to the East of the Great Plains, but thrives best in the north-east plains, especially on the high altitudes of the southern Appalachian hills. The name refers to the production of sugar and syrup obtained from the sweet sap of the tree. Sugar maples growing in the open have a short trunk and a compact and spherical crown; as a forest tree, a relatively short round crown is developed on a long trunk which may attain a height of 130 feet. Forest grown sugar maples are frequently two or three feet in diameter, and have been known to attain five feet.

The wood is known in the lumber trade as white maple; the sapwood which is white, and the heartwood which is light reddish brown, have a peculiar lustre which helps to distinguish the wood of sugar maple from other maple wood.

A cubic foot of air-dry maple weighs 44 lbs.; it ranks as one of the more valuable of the hardwoods of the United States. Maple is used for flooring, shoe trees, agricultural implements, musical instruments, furniture and for a number of objects that need a strong, firm, closegrained wood, capable of taking a polish.

Maple syrup and sugar are important spring crops on many farms in Vermont, New York, Ohio, Pennsylvania and Michigan. As a rule forty-five to fifty gallons

of the sap are boiled down to obtain a gallon (1) of syrup ; a tree yields generally from 15 to 20 (American) gallons of sap.

The sugar maple is capable of growing under a variety of conditions but grows especially well on gravelly, slightly alkaline soils. A few plantations have been established with a view to combining sugar with timber production, but in view of the slow growth of the trees such an investment is not likely to be fully remunerative.

Although not so well adapted to city street conditions as some of the other maples, the tree is often planted in the United States along suburban streets and country roads. Seedlings and small trees are easily transplanted. (*American Forests*, Washington D. C., March 1933).

As regards the acclimatisation of the sugar maple in Europe, Prof. PAVARI, Director of the Station of Forestry Research at Florence has informed the International Institute of Agriculture that experiments made over a period of about 70 years with this tree in Central Europe have given the following results: as regards situation, it has the same requirements as the *Acer platanoides*, but, in addition, it requires fertile and deep soils. There are some good examples in the arboretum of Vallombrosa (Florence) ; but, although this arboretum is situated 1000 metres above sea-level, in the midst of extensive pine woods, it appears that, in spite of the altitude and the local humidity, the sugar maple does not well tolerate certain summer temperatures in this latitude.

R. W.

## BOOK NOTICES \*

### Fruit Growing.

Dott. Agr. Carlo RAVA, *Manuale di frutticoltura pratica*, 195 p., 42 fig. Torino 1933-XI, Casa editrice Giovanni Chiantore, Successore Ermanno Loescher.

This manual of practical fruit growing is a collection of discussions held on Sundays at the fruit experimental stations of Turin, Milan and Genoa.

Part I is concerned with *Culture* and contains 3 chapters:

(1) Specialised fruit growing (pear, apple, peach, apricot, cherry, plum). This chapter gives information on soil, manures, pruning, varieties, etc. for each species of fruit.

(2) Ripening, picking, packing, and storage of fruits.

(3) Work to be carried out each year in the orchard (tillage, weeding, irrigation, periodical organic and chemical manuring).

Part II deals with the *Principal causes of damage and disease* :

(1) Bad weather and other adverse conditions (cold, heat, frost, rain, hail, bad soil conditions, premature dropping of fruit).

(2) Non parasitic affections and those of uncertain nature (chlorosis, gummosis, etc.).

(3) Vegetable parasites (bacterial and fungus diseases).

(4) Animal parasites (field voles, etc. and insects).

An Appendix gives instructions for grafting and budding and a fruit-growers' calendar showing the work to be carried out each month.

D. K.

(1) N. B. The American gallon = 3.785 litres; the Imperial gallon = 4.546 litres.

\* Under this heading are included short synopses of books received for review.

KNAUS C., *De Koffiebereiding*, Handboek voor de Koffiecultuur, Tweede Deel, Soerabaja, 1933. 95 pp., 51 fig., 3 plate.

No book dealing with the preparation of coffee berries on the plantation has been available hitherto. Most manuals on coffee growing contain a number of chapters on the preparation processes, but describing mainly the methods followed in Brazil, and no detailed and critical description of the wet method is given. This work by Dr. C. KNAUS, technical officer of the Malang Experiment Station, therefore merits attention. As it has appeared this year it is not mentioned in our monograph on coffee in 1931 and 1932.

The book is intended for robusta coffee planters in the Dutch East Indies and has two purposes in view, namely, to make known the modern processes for replacing hand labour as far as possible by machinery, and to bring about a standardisation of the preparation processes, which will result in a greater degree of uniformity in the robusta coffee and so will increase its at present not very high value on the European market.

Preparation by the dry method followed in Brazil and in the regions of the Dutch East Indies where coffee is grown by natives is dealt with very shortly. The European factories use only the wet method and are therefore fully described by the author, who has made a thorough study over a number of years of all phases of coffee preparation.

Chapter 2 deals with factories and equipment. The methods of transport from the plantation to the factory are discussed; aerial cable transport is much used in Java where the greater number of the plantations are on hillsides. An ordinance of 1928 prescribes that berries must be weighed on arrival at the factory, instead of as formerly measured in a receptacle of a known volume. The writer proposes that the berries should be received into conical washing tanks in which the sound red berries would be separated from small stones, sand, black berries and those attacked by the coffee berry borer. The tank is described with a diagrammatic illustration. The only pulpers that should be used are those of the cylinder type and the "Raoeng" pulper; the advantages and drawbacks of the different types are described.

The chapter on fermenting and washing of coffee before hulling should be studied also by planters of other coffee growing countries. It is clear that much time and labour may be saved by using washing tanks of the "Rapido" and "Vis" types, which are now installed on most Dutch plantations but are little known elsewhere.

The different types of drying machines are exhaustively studied. Air drying is hardly used in the Dutch East Indies for various reasons, namely, that it requires too much time, the labour costs are too high, and the product is unsatisfactory in appearance. Drying houses in the form of solid buildings are therefore mainly used; there are several types fitted with furnaces burning wood coming from the shade and coffee trees and coffee hulls. Of recent years however there has been a tendency to introduce other types of driers in which the coffee is stirred by various mechanical means. Very interesting examples are described.

The hulling machines described are of the types long known. Among the sorters on the other hand are new types, such as those using a well directed draught of air. Finally the question of motive power is discussed and a diagram is given showing the ideal arrangement of the various machinery in a modern factory.

In chapter 3 the writer gives a critical study of the various processes of manufacture, viz, pulping, fermenting, washing and drying, with special attention to fermentation and drying.

Chapter 4, with fine coloured plates, deals with the product and its defects.

Tables are then given showing the chief constants in continual use by the head of a factory for directing all the operations (specific weight and water content of the berries,

of the finished product, the pulp, hulls and of the various fuel woods, results of chemical analyses, etc.).

The final part is concerned with preparation from an economical standpoint. The writer reaches the conclusion that allowing a maximum period of 5 years for amortization of new appliances, the costs of preparation in a modern factory may be estimated at half those of a non-modernised establishment. Coffee planters will thus find it profitable to study this book, which is worthy of translation into one of the languages used in other coffee growing countries.

W. B.

### Rural Housing.

*Farm and Village Housing.* Report of the Committee on Farm and Village Housing. The President's Conference on Home Building and Home Ownership, Washington D. C., 1932, 293 pp., figs.

There is almost infinite variety in the rural housing in America. The primitive cabin of the mountaineer, the one- or two-room shack of the southern tenant cropper, the adobe hut of the Mexican farm laborer, the prairie home, the New-England farm home or that of the southern plantation, have all individuality and special qualities of their own. Some standardization in farm house design appears in many mining villages and small industrial villages, and occasionally in tenant houses of southern plantations.

In the American literature of the past, farm and village housing was however almost completely neglected; therefore a special Committee was formed at the Conference on Home Building and Home Ownership, to study the matter. As a result of these studies the Committee has issued the present volume which is one of the most valuable contributions to the American literature on housing that has been published during the past generation. It contains six parts, each of several chapters. The last part deals with farm and village housing conditions, the 2nd with design and construction, the 3rd with farmstead planning and beautification and painting, the 4th with economic and financial aspects of farm dwellings, the 5th with some special phases and problems of farm and village housing, the 6th with educational aspects of farm housing. Pains have been taken to avoid exaggeration and to make the volume in its field as fair a statement of conditions as the available information makes possible. It will thus be a useful reference work and handbook on its subject matter for public and private organizations, or individuals interested in raising the housing standards of rural America.

H. J. H.

### Forestry.

KARIGI, K., *Die selbstaendige Fortsverwaltung.* Vom Verwahrungsdienste eines mittelgrossen Waldgutes. Wien und Leipzig, 1932, Verlag von Moritz Perles, 179 p.

This little treatise on independent forestry management contains useful information in regard to the duties of the forestry expert in charge of the administration of a forest of average extent, that is, according to the writer, a forest of 600 to 4000 hectares, a forest unit which in Austria is as a rule administered by a single forestry expert.

Information is included on the importance of various factors that may have effect on the management of the forest (extent, exposure, other local conditions, purpose for which worked, etc.), supervision of the forest, organisation of the service, etc. The most important chapters are those dealing with technical forestry work (working, regeneration, cultivation, removal of fellings, transport of timber), game and shooting regulations, commercial activities essential for the administrator of the forest and forestry account-

tancy systems. The book is completed by a large number of practical models, tables and schedules for use in all the office work which must be undertaken by the forester.

The book is designed by the author for the use of forestry experts beginning their work on forests of average extent, and for this purpose it is admirably adapted, while more experienced foresters and forest owners will also find much valuable information therein.

G. L.

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### Books.

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GARCÍA, R. Agricultura y ganaderia. Industrias agrícolas y pecuarias. Barcelona, Sopena, 1933, 718 p. (Biblioteca hispania).

ŁUDKIEWICZ, Z. Dobry gospodarz: praktyczny podręcznik uprawy roślin rolnych i ogrodowych, hodowli i leczenia zwierząt oraz organizacji i prowadzenia gospodarstwa wiejskiego. Warszawa, Księgarnia rolnicza [19- ], 422 p.

[Bon agriculteur: manuel pratique de la cultivation des plantes agricoles et horticoles, de l'élevage du bétail et de l'organisation et aménagement de l'exploitation rurale].

MANETTI, C. Nel solco fecondo: piccola enciclopedia agraria della vita rurale ad uso delle scuole di avviamento professionale a tipo agrario. 2ª ed. de « Il libro del maestro rurale e del fattore di campagna ». Milano, Hoepli, 1933, 4 v.

SCOTTISH AGRICULTURAL ORGANISATION SOCIETY. Report for the year 1932. Edinburgh, Turnbull & Spears, 1933, 65 p.

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v.4. Spezielle Analyse. 3. Teil: Organische Stoffe, III. Besondere Methoden. Tabellen. 1.-2. Hälfte), 1933.

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ST. JOHN, H. and E. Y. HOSAKA. Weeds of the pineapple fields of the Hawaiian Islands. Honolulu, University of Hawaii, 1932, 196 p. (Hawaii. University. Research publication, n° 6).



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MITCHOURIN, I. V. Итоги полувековых работ по выведению новых сортов плодовых растений. Москва-Ленинград, Госуд. изд. с.-хоз. и колхозно-кооператив. литературы, 1932, 166 p.

[The results of a half-century of work for the introduction of new varieties of fruit trees. v. 2].

*Horticulture.*

SÉGHERS, N. Les plantes de serre froide en général. Les plantes du Cap, de la Nouvelle Hollande, et de la Nouvelle Zélande. Description, culture, multiplication. Ostende, Leys [1932], 550 p.

*Forestry.*

MORI, A. DE. Artigianato forestale e piccole attività forestali in Italia. Torino, Lattes, 1933, 174 p. (Biblioteca popolare di applicazioni di scienza pratica, n. 25).

PACK, A. N. Forestry: an economic challenge. New York, Macmillan, 1933, 161 p.

PAVARI A. La sperimentazione forestale in Italia. Firenze, Ricci, 1932, 33 p. (Pubblicazioni della R. Stazione sperimentale di selvicoltura, Firenze, n. 1).

*Animal Husbandry.*

CLAUSSEN, [PETER]. Das Angler Rind. Festschrift zum 50 jährigen Bestehen des Verbandes Angler Rinderzüchter. 3. Aufl. Flensburg, «Flensburger Nachrichten», 1933, 146 p.

DIRKS, G. Die wichtigsten Blutlinien des Jeverländer Rindes. Hannover, Schaper, 1933, 246 p. (Arbeiten der Deutschen Gesellschaft für Züchtungskunde, Hft. 57).

TOLLNER, W. Untersuchungen über die Jugendentwicklung des schwarzbunten ostfriesischen Niederungsrindes vom 1. Monat bis zum 5. Jahre. Hannover, Schaper, 1933, 101 p. (Arbeiten der Deutschen Gesellschaft für Züchtungskunde, Hft. 58).

*Agricultural Industries.*

GAUDUCHEAU, A. Traité de l'amélioration des viandes par voie artérielle. Paris, Vigot, 1932, 40 p.

UNION SYNDICALE DE L'HUILERIE FRANÇAISE. SERVICE DE STATISTIQUE ET D'INFORMATION. Les marchés des matières grasses en 1932. Paris, [1933], 63 p.

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(1) Previous list June 1933. To be continued December 1933.

(2) List of abbreviations: bihebd. (biweekly); bimens. (twice monthly); bimestr. (every two months); déc. (every ten days); étr. (foreign price); heb. (weekly); int. (home price); irr. (irregular); mens. (monthly); n<sup>o</sup> (number); N. S. (new series); q. (daily); sem. (half yearly); s. (series); trihebd. (every three weeks); v. (volume); trim. (quarterly).

(3) Between brackets [ ] are given translations and explanatory notes not appearing in the title of the review.

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BURMA. Department of agriculture. *Agricultural surveys*. nº. 1, 1910, irr. Rangoon. prix var. p. fasc.

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[Die Wälder im Norden. (Forsttechnisches Institut in Kasan). Supplement to « Izvestiia kazanskogo lesotekhnicheskogo institouta »].

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

### EDITORIAL

#### World Poultry Farming.

Under the title of *L'Aviculture dans le Monde*, the Bureau of Agricultural Science of the International Institute of Agriculture has just published an important work in three volumes.

In the first volume (272 pages) a general survey is given of the present position of poultry farming in the world, in regard to poultry nutrition from the theoretical and practical standpoints, with statistical tables.

The remaining two volumes are devoted to the special study of the development of poultry farming in the different European countries (Vol. II, 287 pages) and in the extra-European countries (Vol. III, 263 pages). The whole publication possesses vital practical interest and is original in design. The preparation of the different sections of the work has, in fact, been undertaken by experts of authoritative standing in their respective countries. In some few cases only, where it has not proved possible to obtain collaboration of this kind, two members of the editing staff of the Bureau of Agricultural Science with special zoo-technical qualifications, Dr. E. Moskovits and S. Taussig, have prepared reports, the text of which has been submitted for approval to the Governments concerned before printing.

As a result of this generous meed of collaboration, the scope and the quality of the whole work was such as to receive warm recognition on the occasion of the Vth World's Poultry Congress, held at Rome from 6 to 15 September last.

We desire here to express our deep sense of obligation for their valued collaboration to the following: —

Dr. J. Podhradsky and Dr. G. Chomkovič (study on nutrition); Councillor R. Römer (Germany); Dr. O. Eckstein (Austria); Dr. J. Marcq (Belgium); Prof. G. L. Chlebaroff (Bulgaria); Prof. S. Castelló Carreras (Spain); E. Liik (Estonia); Prof. G. von Wendt (Finland); Prof. C. Voitellier (France); P. A. Francis (Great Britain); L. Zographos (Greece); J. Winkler (Hungary); Prof. A. Ghigi (Italy); V. Talce (Latvia); B. Vitkus (Lithuania); A. Roller (Luxembourg); Prof. P. Tuff (Norway); Prof. J. G. Tukker (Netherlands); M. Tribulsky (Poland);

J. Miranda do Vale (Portugal); Dr. J. Braghina (Rumania); Dr. H. Funkquist (Sweden); Prof. A. Schmid and Dr. H. Engler (Switzerland); Dr. J. Podhradsky (Czechoslovakia); S. Ulmansky (Yugoslavia); Ministry of Agriculture (Argentina); F. C. Elford (Canada); Dr. J. Figueroa (Mexico); Nurul Islam (India); W. Gerhardt (Netherlands East Indies); Imperial Animal Husbandry Experiment Station (Japan); David Uri (Palestine); S. Youngberg (Philippine Islands); Dr. Kadri (Turkey); Mlle. Bernard (Algeria); Prof. G. Moussu (French Colonies); L. Tobback (Belgian Congo); Mohammed Askar Bey (Egypt); Service d'Elevage de la Direction de l'Agriculture (Morocco); the Governor (Italian Somalia); E. Ducros (Tripolitania); Service de l'Elevage de la Direction de l'Agriculture (Tunisia); E. Hadlington (New South Wales); F. G. Brown (New Zealand).

It is a matter of regret that, for budgetary reasons, it has proved impossible to publish more than one edition, that in the French language, of this work. The preparation of an edition in English would be gladly undertaken, should there be an assurance of a sufficient number of subscribers.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

### Vernalization: A New Method of Shortening the Vegetative Period of Plants.

The first workers who studied intensively the influence of light on the flowering of plants attributed the greatest importance to the *intensity* and the *quality* of the light. Later, particularly as a result of the work of GARNER and ALLARD, from 1920, the fundamental influence came to be recognised of the *relative duration* of day and night on plant development, which phenomenon they termed "photoperiodism". According to these writers the periodicity of light exercises a fundamental influence on the rhythm of plant growth. Plants are adapted to this periodicity, which differs greatly with latitude.

Short-day plants, having an optimum reproductive development with a day length of 14 hours at most, may be distinguished from long-day plants, having their optimum with a day length exceeding 14 hours, while there is an intermediate group of plants independent of periodicity of light. To the group of short-day plants belong in general all those of tropical origin (cotton, soya bean, maize, millet), while all the cultivated plants of more or less northern origin are long-day plants, such as wheat, rye, oats, flax, etc. The correlation between the photoperiodic behaviour and the region of origin is so close that it would seem possible to deduce the latitude of origin of a plant from its photoperiodic reaction.

Light is only one of the factors responsible for plant development. There are other factors which have a profound influence on the succession of the

various phases of development, and more especially, on the transition to the fruiting stage.

In 1903 KLEBS had already shown that the development of the reproductive organs results from quantitative changes in the general and external factors regulating the development of the plant. According to him there are not specific external factors having a constitutive influence. The factors which decide vegetative growth and reproductive development are identical, but it is their intensity and reciprocal ratio which decide which form of development shall occur. According to KLEBS the factors giving rise to flowering are an increase in carbon assimilation under the influence of light and a reduction of the concentration of certain salts, particularly nitrogenous salts, in the soil. A certain proportion between the carbohydrates and nitrogen predisposes the plant to flowering. TINKER (1929) and RASUMOV (1930) have carried our knowledge further with regard to the factors governing flowering and have proved that a certain periodicity of lighting applied to plants may give them a tendency to flower, without however the tendency being manifested immediately.

It is here that the ideas of Prof. LYSSSENKO, of the Ukrainian Institute of Plant Breeding at Odessa, enter the field. What applies to light applies also to other factors influencing the rhythm of plant development. LYSSSENKO has in fact proved that the factors necessary for transition from the vegetative stage to the reproductive stage are not bound to any particular moment. Their influence may come into force at any moment in the development of the plant. The seed itself at the first incidence of germination is capable of receiving this influence, the effects of which will make themselves felt in the course of growth. LYSSSENKO follows the ideas of KLEBS by making a clear distinction between *growth*, namely increase in weight and size of the plant, and *development*, which is the transition of the plant to successive stages, in other words, a *qualitative* change in the nature of the plant. He has developed the theory that the entry of the plant into a new phase depends on a complex of well defined factors, no one of which must be lacking. In general it is the reproductive phase which is of interest to the farmer. In any particular area only those plants or varieties of plants are cultivated whose vegetative period is such that they are able to complete their reproductive phase in the local conditions of climate.

If it were possible to influence artificially the external factors, that is to say, the sum total of the factors determining the development of a given plant, and more particularly its transition from the vegetative to the reproductive stage, it would be possible to cultivate this plant in regions entirely different from those which are natural to it. This is one of the objects of LYSSSENKO's work.

He endeavoured first to ascertain these factors accurately. It soon became apparent that they differ in the case of different species and even different varieties of plants. It goes without saying that the conditions for short-day plants must differ entirely from those for long-day plants. To enter into their reproductive phase all plants of tropical origin require a combination of high temperature and short daily period of light.

It is particularly with regard to the nature of the influence of light that the researches of LYSSSENKO and his co-workers have introduced new knowledge,

which if it is confirmed will change the conception of photoperiodism of the numerous workers, American and Russian in particular, who are concerned with this phenomenon. LYSENKO, in fact, has been able to prove that these influences on flowering are exerted by light and darkness themselves and not necessarily by an alternation of the two. If it is necessary for a plant to pass through a period of darkness, it is sufficient for this period to be passed through in the seed during the earliest stages of germination. When the stages which require darkness are passed the plant obtained from such treated seed can be grown even under constant illumination; hence neither long- nor short-day plants require photoperiodism. For growth and development of short-day plants light and darkness, but not the alternation of short day and long night, are necessary.

It is on these ideas based on a long series of experiments that LYSENKO has established the process termed "iarovisation" or "vernalization" (1); this consists in regulating the length of the vegetative period of a plant by artificially adapting it to a given environment by means of the combined action of temperature and light on the first phase of the growth of the plant, that is to say, on the germinating seed.

The practical interest of vernalization consists at present in accelerating the fruiting season, thus making plants earlier in maturing. It thus allows of growing a spring-sown crop instead of a winter crop. By curtailing the vegetative period it is possible to extend the cultivation of wheat, cotton, soya bean and other plants into regions in which their cultivation had previously been impossible. The process may also be of fundamental importance in the combat of drought, by bringing the plants to maturity before the arrival of the summer drought. Plant breeders, who are always anxious to cultivate as many generations as possible in the course of a single year, will be able to draw considerable benefit from it; further, since any factor which increases the earliness of harvest increases also the content in protein, vernalization will exercise also this very desirable effect from the standpoint of the baking quality of wheat.

With a view to encouraging those interested to test these results for themselves, LYSENKO'S process of vernalization of wheat will be described. Wheat requires to reach the fruiting stage a period of low temperature and long illumination. Spring wheat, for example, requires a temperature of 3 to 5° C during 10 to 15 days. It will thus be necessary for these conditions, artificially produced, to exercise their influence on the germinating grain in order to give it the tendency to pass earlier from the vegetative to the reproductive phase. That is to say to make it earlier maturing.

The grain is first soaked with water to 15 % of its weight: 100 kg. of wheat containing 13 to 15 % of water will absorb 33 litres. This water is added in three applications. To absorb the first application about two hours are required, for the second 5 to 7 hours, the third will be absorbed still more slowly. The grain must be turned with shovels to ensure the water being well mixed and

(1) For the etymological explanation of this term see the *Monthly Bulletin of Agricultural Science and Practice* 1932, No. 8, p. 289.



to prevent the temperature rising above 15° C, the optimum temperature being from 10 to 15° C. When 3 to 5 % of the grain has begun to sprout, which takes about 24 hours, the preparation is finished and the chilling process of vernalization proper begins. The temperature is lowered to 3 to 5° C and kept at this level day and night for 12 to 15 days. The interior and exterior temperatures of the layer of grain must be accurately controlled. After the treatment the grain must be dried by shovelling and winnowing.

Autumn wheat is vernalized at a temperature of 0 to 3° C during 40 to 55 days. It is scarcely necessary to emphasize that during such treatment care must be taken to avoid mould. Experiments are in progress to obtain control of mould by chemical disinfection.

The process of vernalization elaborated by LYSSSENKO for cotton is extremely simple and consists only in increasing the temperature of the seed by self-heating to 30°. For soya bean the following method is proposed: soaking with water at the rate of 75 litres to 100 kg. of seeds, vernalization for 10 to 15 days at a temperature of 20 to 25° C in the absence of light.

Vernalization of potatoes is effected by threading the tubers on wire and exposing them to continuous light for 20 to 30 days at 15 to 20° C. in a dry atmosphere.

It is interesting to draw a parallel between the work of LYSSSENKO and the recently published studies of G. TALLARICO in Italy. In the course of his numerous experiments aiming at physiologically influencing seeds to increase the yield, TALLARICO submitted hard wheat for 14 days to the influence of a temperature of 2° C before sowing. This experiment, which was carried out at two different places during two consecutive years and repeated in three replications, gave the following averages:— on the control plots, 16.9 quintals per hectare; for the plots with treated seeds 19.6 quintals per hectare, or a gain of 2.7 quintals per hectare. It should be expressly stated that TALLARICO, though independently approaching, as regards temperature and the duration of the period of treatment, the prescriptions for LYSSSENKO's vernalization, differs fundamentally in the fact that the seeds were treated in the *dormant* stage, whereas LYSSSENKO on the contrary treats seed after germination has already begun. Also TALLARICO mentions particularly that the effect of treatment by cold does not affect the vegetative period, but only the yield. In the vegetative cycle of plants the period of germination constitutes a critical stage, a period of instability and special sensitiveness to external factors. It is for this reason that during this period plants are particularly susceptible to artificial influences. In a further series of important experiments TALLARICO stimulated seeds by a treatment, with water without however repeating treatment with low temperature. As did LYSSSENKO he uses as little water as possible to obtain complete imbibition, which is checked at the moment when the first sign of germination is apparent. His numerous experiments have given the following average yields:—

	In poor soil	In rich soil
Untreated seeds (= 100) . . . . .	100	100
Seeds treated with water . . . . .	130	106

Thus there is observed a great increase in the crop as a result of treatment with water. This increase however depends to a large extent on the quality of the soil, as has been often observed in the experiments of stimulation by the POPOFF method. A comparison of the experiments of LYSSSENKO with those of TALLARICO is very instructive. If treatment with water and treatment with low temperature each exercise a stimulating influence, and if on the other hand the effect of this stimulation depends on the nature of the soil, it is clearly demonstrated that the effect of vernalization may be due to reasons very diverse and independent of each other. This shows also the complexity of the phenomenon and the difficulty of analysing it.

Since the original work of KLEBS on the subject it has been recognised that the factors affecting plant development act indirectly through their influence on the enzymes. DEMKOVSKY, one of LYSSSENKO's co-workers, has carried out exhaustive studies with a view to finding a biochemical explanation of vernalization. According to him enzyme activity increases gradually, and differently for the various enzymes, during vernalization. The explanation of the phenomenon does not however become simpler if the complex problem of enzymes is taken into consideration. The effect of vernalization of wheat may however be explained in the following manner: the preparation for vernalization (soaking at 10°) activates the enzymes, thus increasing the sugar content: the vernalization proper which follows and consists in reducing the temperature to 2°, reduces respiration and thus leads to a concentration of sugar which predisposes the plant (in this case the germinating seeds) to flower. The factor "darkness" does not come into play, as in the case of short-day plants, because wheat, which is a long-day plant, is adapted to the periodicity of light occurring in northern regions. A similar explanation of vernalization may be made for short-day plants. This however is only a matter of unproved theory.

It would appear that varieties coming from distant countries are liable to react most strongly to vernalization and that the local varieties are less susceptible to its influence. In this case vernalization should serve to replace by an artificial process natural adaptation to external conditions. It does not seem probable however that changing one or two factors such as light and heat, could suffice to ensure complete adaptation of the vernalised plant to environmental conditions differing profoundly from the normal conditions. It would thus appear unwise to try to use for vernalization and large scale cultivation foreign non-acclimatised varieties.

Studies of vernalization have been carried out in Russia on a huge scale. It will suffice to mention here that in 1932 they had already been extended to the 7000 varieties of wheat constituting the international collection of the Pan Union Institute of Plant Breeding. Thousands of varieties of this collection had not been able to come into fruit in the regions where the experiments were carried out, or else fruited too late and produced stunted grain; sown after vernalization the same varieties proved earlier than the local varieties. Experiments carried out in 1932 on the Collective Farms ("kolkhoz") and the State Farms ("sovkhoz") over an area of 43,000 hectares gave for the most

part favourable results, consisting in an increase in yield of one quintal per hectare (1).

Satisfactory results have also been given by the experiments with cotton. Those made in the Ukraine, in Northern Caucasia and in Transcaucasia, have shown that vernalized cotton has an accelerated flowering and maturation.

In consequence of these favourable results the U. S. S. R. National Commissariat of Agriculture, in agreement with the Directors of the regional agricultural administrations and the National Commissary of the Federated Republics, decided at the meeting of 12 October 1932 to sow vernalized seed, using primarily hard wheat, in the spring of 1933 over an area of 200,000 hectares, 100,000 of which were to be in Ukraine. The Ukrainian Institute for Plant Breeding gives advice on the varieties suitable for vernalization. Vernalized cotton is to be tested on an acreage of 3,000 hectares, of which 2000 are in regions where cotton growing has been recently introduced. The Ukrainian Institute has been made responsible for sowing in various parts of the Soviet Union, including the extreme north, the international collection of vernalized varieties of wheat, oats, barley and bean which are available at the Leningrad Institute for Plant Breeding. The Odessa Institute has received thousands of enquiries concerning vernalization. Upwards of 25,000 explanatory notices about vernalization of wheat have been distributed and have been insufficient to meet the demand.

All this proves the importance attached in Russia to vernalization. In fact, if all the hopes founded on it were vain and the only result remaining were the possibility of accelerating by 4 or 5 days the maturity of wheat, this alone would be sufficient to render vernalization of interest for a number of countries. In the light of the very numerous experiments carried out in Russia during

(1) The following are some recent details of the results of these experiments and of certain others:

1. In the spring of 1932 at Kharkov, Ukraine, 1427 varieties of wheat from Aserbeidjan (Transcaucasia) were sown, vernalized and non-vernalized. On 5 July all the plots sown with vernalized seed had headed, whereas the control non-vernalized plots were still behindhand: in fact, at this date only 198 of the 1427 varieties (or 13.8 %) had come into ear; heading increased until 6 August, when 649 varieties had headed; but the 778 other varieties never headed at all.

2. In 1932, also in the Ukraine, in 240 kolkhoz and 12 sovkhoz a total of 3334 hectares were sown with vernalized seed. The gains in yield per hectare attributable to vernalization were as follows: — 1 quintal in 127 kolkhoz, 2 quintals in 38 kolkhoz, 2.3 quintals in 9 sovkhoz and 3 to 9 quintals in 18 kolkhoz.

In 25 farms however vernalization produced no increase in the yield and in 35 farms it even reduced the crop, a failure which is attributed to the use of unsuitable varieties and to a defective application of the technique of vernalization.

3. In the organ of the U. S. S. R. National Commissariat of Agriculture, 29 September 1933, were published the encouraging results given by vernalization in the region of the middle Volga where in 1933 28,000 hectares were sown with vernalized seed; this year the early drought damaged particularly the non-vernalized wheat which thus gave a lower yield than the vernalized wheat.

4. In a preliminary note published in *Scientific Agriculture*, Vol. XIII, No. 11, 1933, F. GFELLER and his co-workers of the Central Experimental Farm of Ottawa, Canada, state that vernalization of cereals has in 1933 produced results similar to those obtained by Prof. LYSSENKO.

1932 it would seem certain that this end will at least be obtained. It is much to be regretted that the directions for vernalization were at first published only in Russian and Ukrainian and in not readily accessible publications, so that for a long time they escaped the attention of the world. The consequence is that up to the present it has not been possible to test the Russian results in other countries. The example of seed stimulation which caused such a stir a few years back and proved of very small practical interest, should make us wary of too greatly exaggerated hopes. However, the problem is sufficiently promising from practical and scientific points of view to deserve exhaustive and immediate trial.

It is to be hoped that the results of the important Russian experiments and of the control experiments now in progress in other countries, will enable vernalization to pass from the experimental field into general practice. It may then prove that vernalization is one of the most valuable of the technical inventions in the domain of agriculture of the last twenty years.

N. VON GESCHER.

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## Promotion of the Poultry Industry in Various Countries (1).

The ever increasing importance of poultry in agriculture and in the national economy of each country has led the Governments to grant effective help and protection to the industry. Poultry raising has all the more need of the interest shown in it by public institutions as it is for the most part in the hands of small farmers.

Unfortunately there are not available uniform statistics on this point, but the reports of the different countries published in the monograph "*L'Aviculture dans le Monde*" (Vol. II and III) supply indications of value particularly from the following countries:— Austria, Irish Free State, Japan, Hungary, Norway, Rumania and Switzerland.

Poultry raising is regarded mainly as an accessory activity on the farm, particularly in the case of small farms, for persons often having no agricultural training or special knowledge. The poultry stock being distributed in small flocks, and poultry raising being carried on without technical knowledge, have resulted in the poultry industry, the Cinderella of stock farming, being still practised to-day according to traditional principles which in many countries hinder the adoption of modern technical improvements. This is particularly to be regretted as the keeping of poultry is admirably adapted for assuring ready money to the small farmer, and with a small outlay gives variety to the farm and allows of the utilisation of waste from the farm and homestead.

However the requirements of the consumer of poultry products at the present time make poultry farming pay only if high grade produce can be supplied to the market.

The encouragement of poultry raising is not only a social duty that must be carried out by the Government in the interest of numerous small farmers but is undertaken because the State recognises the ever increasing importance of poultry in the national economy. It is therefore not surprising that the various States have of recent years practised a steadily increasing policy of encouragement. It is interesting and instructive to examine what each has done in this field and to compare the measures adopted with the results obtained, as can be done with the help of the reports received. Their publication dispenses with the need to discuss further the organisation and programme of the encouragement of the poultry industry, but in view of its great importance a summary will be given of the measures already taken in the matter.

For the purposes of this article, the measures will be divided into two main groups:—

1. — Measures of commercial and financial policy for the *direct* increase of the earning capacity of poultry farming.
2. — Measures to achieve the same end *indirectly* by improving technique, developing training in poultry husbandry, etc.

(1) In this article is reproduced the greater part of Chapter III (Promotion of the Poultry Industry), Vol. I, of the Monograph *L'Aviculture dans le Monde*, published recently by the Institute on the occasion of the Fifth World Poultry Congress held in Rome in September 1933.

## I. — MEASURES OF COMMERCIAL AND FINANCIAL POLICY.

(1) *Government intervention in the trade in poultry products.*

The more accentuated becomes the world economic crisis the more do the various States endeavour to intervene in the field of economics by legislation. This movement is bound to embrace the poultry industry. It would take too much space to enumerate all the causes which have led to the complicated system of ordinances and regulations in the net of which commerce, already so heavily shackled, is further tied. In some cases the measures are taken to protect the home poultry industry, sometimes they are suggested by the urgent requirement of protecting the whole national economy, as, for example, regulations regarding monetary exchange.

Taken as a whole this labyrinth of regulations clearly denotes the efforts of the importing countries to become economically self-supporting, which efforts invoke antagonistic response on the part of the exporting countries. In this strife the weapons of the importing country are tariffs, restriction of imports by the quota system, measures of veterinary policy of live stock, limitation of purchase of foreign currency and enforcement of marks of origin for imported products. By these means countries are endeavouring at all costs to diminish importation.

The exporting countries, on the other hand, are doing all in their power to encourage the exportation of their products by such means as export premiums, special freight rates, better grading of produce, etc. In these countries also monetary problems are of the highest consequence; thus, for instance, certain countries have been obliged, in some cases with the sole object of maintaining their export trade, to abandon the gold standard, a decision which benefited also their foreign trade in poultry products. Other countries, which desired to retain the gold standard and could achieve this only by strict regulation of the exchange have been obliged to put pressure upon exporters to pay to a central body the proceeds from their foreign sales. It is clear that this last measure must result in many difficulties and slow down export activity; but in the majority of cases it has not been possible, owing to the gravity of the monetary situation, to take these difficulties into consideration and efforts have been made to compensate for the inconveniences by grants of other privileges.

The measures thus briefly outlined can scarcely give a complete picture of the confusion which reigns to-day in the world commerce in poultry products. But as a detailed discussion is impossible, our primary interest is less in the complexity of the various measures than in the measures themselves (1). If they are considered it is found that they are all recognised weapons of the arsenal of commercial policy and are used also in other fields and for other products.

(1) For a good summary of the principal measures of commercial policy in the international egg trade as current at the beginning of January 1933, the reader is referred to "*Staatliche Eingriff in den internationalen Eierhandel*", in "*Eier-Börse*", Berlin 1933, Nos. 6, 7, 8, 9. For the years previous to 1933, see also the latest volumes of the *International Yearbook of Agricultural Legislation*, Rome.

The measures which are worthy of more particular attention are those which concern marking and standardisation of poultry products.

The application of marks of origin to these products and the related measures of classifying the products in commercial grades were first introduced in Denmark by legislation regulating the marketing of eggs. The aims of these measures were to make the Danish produce a sort of standard merchandise, to guarantee to the buyer a certain quality, and thus to make the products so commend themselves as to assure a market for Danish produce. Later similar measures were adopted by other States and applied in the first place to eggs, more rarely to poultry meat. The more widely such measures come to be applied the more extensive do their aims become: thus, in importing countries, they must assure the protection of the home produce and must further prevent abuses such as the possibility of imported eggs being re-exported to a third country carrying the mark of the re-exporting country in place of that of the genuine country of provenance. In 1930 bills concerning marking were planned or already put into effect in Denmark, Great Britain, Belgium, the Netherlands, France, Italy, Switzerland, Poland, Rumania, Soviet Russia, Estonia, the United States, etc. It is readily realised that if these measures had all been applied independently of each other it would have seriously complicated the international egg trade. In these circumstances, therefore, M. A. HENRY, Delegate for Belgium, the Belgian Congo and the Grand Duchy of Luxemburg to the International Institute of Agriculture of Rome, requested the Permanent Committee of the Institute to take steps to ensure that the measures should be uniform and therefore such as to facilitate the international egg trade (1).

Recognising the importance of the question the International Institute of Agriculture organised a preparatory conference of experts, which was held at Rome from 11 to 13 May 1931 and drafted the bases for the Diplomatic Conference of 7 December of the same year, at which 19 countries were represented by delegates and 8 others sent observers. During the discussions of this second Conference a Convention was drawn up and signed by the delegates of the following countries: — Germany, Belgium, Spain, Estonia, Finland, France and Algeria, Greece, Italy, Norway, the Netherlands, Switzerland and Uruguay; while the following States abstained from signing: — Bulgaria, Hungary, Poland, Rumania, Turkey and the U. S. S. R. (2).

Up to the present the Convention has been ratified only by Switzerland.

When it is considered that in the meantime a certain number of other countries have introduced special measures regarding marking, it will be realised that the question cannot yet be regarded as settled.

The special problems raised by legislation on this complex and delicate matter are somewhat numerous. Should the marking of eggs be established? And, if so, should fresh or preserved eggs be marked? Should the mark be affixed to the egg or the package, or to both? Further, where and when and in accordance with what rules and regulations should the mark be applied? And, lastly, should eggs

(1) In this connexion see *L'Aviculture dans le Monde*, Vol. I, pp. 38-44.

(2) The text of this Convention is reproduced in *L'Aviculture dans le Monde*, Vol. I., pp. 44-49.

for exportation be graded by weight and by colour? This series of questions is, as may readily be understood, solved differently in the different legislative measures and regulations, following the customs and traditions and, more particularly, the dominating interests of the different countries, and chiefly according to whether the country in question is an importer or exporter of eggs (1).

(2) *Steps taken for the better organisation of marketing.*

Side by side with questions concerning improvement of the technique of production, interest has recently centred about a better organisation of the commerce in eggs. Since the war, marketing as well as production has undergone radical changes which, apart from the adoption of such technical innovations as cold storage, refrigerated transport by rail and sea, motor lorries, etc., affect even the structure of the trade in poultry products, for the high level of production in the more advanced countries can be obtained only as a result of rationalisation of marketing methods. It is thus not surprising that in times such as ours the State often intervenes also in the matter of marketing, but such intervention is in the greater number of cases demanded by the producers themselves. The measures already mentioned concerning the marking of eggs have frequently provided Governments with the opportunity to legislate on the trade in poultry products.

It is in short clear that an industry such as the poultry industry, which is in the hands of several thousands of producers, often having little capital, affords much scope for Government intervention and also will derive much benefit from the establishment of producers' cooperative societies. Such cooperative societies are of special importance for the marketing of eggs from small farms since by suitable grading the societies can adjust the lack of uniformity of the products and thus shield the producer from the lower prices which such a defect would entail. However, standardisation of the products can and should be attained before grading, for the producer should aim at obtaining uniformity. This fact is already recognised in the more advanced poultry raising regions. In this connexion it is sufficient to recall the egg production of Sonoma County in California, where in 1928 there were already about two million White Leghorns kept under practically uniform conditions of housing and feeding in order to obtain a uniform product.

As regards marketing, it has been found advantageous as far as possible to sell wholesale direct to the markets. The association of all the small cooperative societies into large central organisations is therefore necessary. Among the best known of such organisations are the Pacific Coast Egg Producer Association in the United States, the "Dansk Andeels Aegexport" in Denmark and the "Boermond Eiermijn" Cooperative Society in the Netherlands (2). It

(1) See the *International Yearbook of Agricultural Legislation*, International Institute of Agriculture, Rome 1930. The various volumes of the Yearbook contain also the principal rulings relating to the marking of eggs.

(2) See, HANS VON DER DECKEN, *Entwicklungstendenzen in der Eierwirtschaft*, in *Vierteljahrshefte für Konjunkturforschung*, Sonderheft 27, Berlin, Institut für Konjunkturforschung, 1932.



should however be noted that the attempt to eliminate the existing specialised trade has not succeeded ; on the contrary, collaboration has been established between the cooperative societies and the commercial firms, with division of labour, the cooperative societies supplying standardised produce to the trade, which undertakes the retail sale.

From the reports received from various countries it would appear that the cooperative societies are developing and becoming powerful (1). But it should not be forgotten that formerly the idea of cooperative marketing met with resistance from individualistic producers who preferred for one reason or another to stand out from the societies. An interesting attempt to combat this situation is seen in the English Agricultural Marketing Act of 1931 which, on certain conditions, allows the majority of producers to exercise coercive measures on indifferent or obstructive minorities in order to obtain success for the officially recognised marketing schemes (2). There is a similar law in New South Wales : the Primary Products Marketing Act of 1927, which prescribes an obligatory association of producers, who elect from among their number a Marketing Board which is responsible for supervising the marketing of eggs.

In recognition of the importance of poultry raisers' cooperative societies a number of States grant them special assistance. For instance, they are sometimes allowed Government loans on a considerable scale, either without interest or at a very low rate of interest, and in certain cases even receive direct State aid, or are granted special privileges, such as exemption from customs duty on imported grain.

Before ending this section mention should be made of the interesting Bill now before the New Zealand Parliament, although strictly speaking it should not be dealt with here. In New Zealand the unusual situation has arisen that the prices within the country have remained high owing to exportation of eggs, though such exportation has been at a loss. To suppress the injustice of producers selling to the home market realising profits at the expense of the exporting producers the Bill prescribes that in future any breeder whose head of poultry exceeds a certain limit shall pay a levy to meet the exporters' losses.

### (3) *Other measures of commercial or financial policy.*

Various States grant poultry breeders financial aid by making it possible for them to procure poultry feeds or equipment at reduced prices as a result of exemption from or great reductions in customs dues. As regards feed grains, this kind of financial aid acquires importance in importing countries in which the prices of these cereals, increased by protective tariffs, make competition in poultry production difficult with other countries which are able to produce more cheaply. Generally such grain exempt from duty is rendered unfit for human consumption by some chemical treatment such as colouring with eosin.

(1) In regard to the development of cooperative marketing of eggs, see, H. TENHAEFF, *Stand und Entwicklungsmöglichkeiten der genossenschaftlichen Eierverwertung in verschiedenen Ländern*, in *Berichte über Landwirtschaft*, Berlin 1923, Band 17, Heft 1.

(2) See Report of Great Britain in *L'Aviculture dans le Monde*, Vol. II, p. 125.

On the other hand in certain exporting countries prices of homegrown grain are artificially raised for the purpose of providing a fund to assist the export trade.

In several countries (Turkey, Mexico, etc.) importation free of duty is allowed for poultry farming requisites such as incubators, serums, etc. In Turkey the only requirement is that imported incubators shall be utilised within six months of importation, failing which customs duties must be paid. Switzerland assists the poultryman by grants in aid of poultry insurance. It is scarcely necessary to point out the advantages of such insurance or to emphasize the importance of official aid, which alone allows of insurance premiums being maintained at low rates.

Let us mention in conclusion the most simple means of direct aid for the poultryman, namely the granting of loans at a low rate of interest, or even without interest, which by reason of its simplicity is a highly effective method.

## II. — MEASURES AIMING AT IMPROVEMENT IN POULTRY HUSBANDRY TECHNIQUE.

Before discussing the various measures their promoters should be briefly considered.

In the greater number of cases the State itself undertakes the control and direction of the poultry industry. In Canada in order to ensure a profitable collaboration between the Central and Provincial Official Organisations, a Poultry Commission has been instituted which is responsible for the promotion of the industry and consists of three Dominion officials, who have recently been supplemented by a representative for each province. In Mexico a similar organisation has also been established.

In many cases the State keeps the direction in its own hands but entrusts the execution to large agricultural or avicultural associations which receive State aid.

In most cases the measures of encouragement are financed by State funds, sometimes they receive subsidies from other bodies, such as is the case for example in Italy, where the provincial poultry farms are maintained in part by the bodies interested. An interesting example is the organisation in force in Bulgaria where, in addition to the State, the Exporters' Association also supplies funds for the promotion of the poultry industry.

The various measures aiming at raising the technical level of poultry keeping may be divided into three groups:—

- (1) Measures relating to poultry instruction and research.
- (2) Measures aiming at increasing the yield from poultry.
- (3) Measures for the control of poultry diseases.

### (1) *Measures relating to poultry instruction and research.*

The importance of instruction for raising the general level of the poultry industry can scarcely be exaggerated, particularly when it is realised that the greater part of the poultry stock is owned by small farmers. It is certainly not

a matter of chance if the greatest progress is accomplished in the countries in which training and instruction are furthest developed.

The organisation of instruction in the various countries depends naturally primarily on local conditions.

The greater number of States maintain schools of poultry husbandry which are often in close association with research institutions. Many States are not content merely with the establishment of central schools but employ numbers of travelling instructors and advisory specialists who visit the breeders to give advice and instruction. In the United States and in many other countries there is such a service, which gives excellent results. In several other States interested in poultry raising similar services are in process of organisation. With regard to the training of pupils, poultry instruction is included in all degrees of agricultural education; thus to-day in nearly all States there are courses in poultry husbandry in all the primary agricultural schools, as in the higher schools of agriculture. In this connection should be mentioned also the propaganda of the United Provinces Poultry Association (India) and of the Government of South Africa which have demonstration trains carrying a complete poultry farm which tour the country for purposes of instruction.

This method constitutes an interesting solution of the problem of post-school instruction, which must aim at reaching the greatest possible number of interested persons. Very good results have often been obtained by organising in the poultry schools, in addition to the regular teaching, short courses on various special subjects such as incubation, dressing of poultry, etc. In several countries courses in poultry keeping are organized also for the military (e. g., Turkey) and for persons able to take up poultry keeping as an accessory occupation (keepers of permanent way, etc.). In countries in which the enormous distances to be covered do not allow of the use of itinerant instruction, teaching by correspondence has been found satisfactory.

In addition to the instruction given to poultrymen themselves, special attention must be given to producing teachers, inspectors, etc, and persons capable of occupying administrative positions in the organisation of the poultry industry. At the present time nearly all the higher schools of agriculture include in their programmes special courses in poultry husbandry and often have even independent professorships of poultry husbandry.

Parallel with the teaching institutions are research institutes and specialised establishments for promoting the progress of the poultry industry. These institutes carry out experiments (recently special study has been given to the problems of heredity, alimentation and incubation) and allow breeders to profit from the results obtained by producing excellent cocks which they put at their disposal, either gratuitously or at very reduced prices.

There are already institutions of this kind nearly everywhere. In addition to the research institutes properly so called, of scientific nature and organisation, of great importance are the modern poultry farms organised on practical lines and serving for demonstration purposes, maintained by the State or by other official bodies (District, Department, Commune, Association) or at least officially controlled and recognised.

Practical knowledge is disseminated to-day not only by the press (news-papers, reviews, leaflets), but also by the cinematograph and wireless, which now count as among the most important and effective of extension agents.

Exhibitions have always been very effective for purposes of propaganda for stock breeding in general and have also a great part to play in the poultry industry. In some cases a poultry industry is carried on only in view of the poultry shows and the breeders aim at the standard forms prescribed without taking into consideration practical requirements.

Happily the situation has changed of late and to-day the very widespread laying competitions have in many countries taken the place of the poultry shows.

(2) *Measures aiming at increasing the yield from poultry.*

Improving the laying capacity of the birds, which is not only very variable but sometimes still very low, as shown in statistics of egg production (1), is certainly the most economic, the most effective and the most durable method of increasing poultry production. Since an active interest has been taken in poultry products every effort has been made to improve the poultry stock and render it more productive.

In the same way as the State exercises a decisive influence on the improvement of cattle by the distribution of approved bulls, etc., similar measures are taken in regard to poultry. But the methods followed must be different in the case of poultry, the breeding of which is controlled only with difficulty.

The poultry stock is improved in the first place by supplying breeders with eggs for hatching, cocks and utility birds of known origin, either gratuitously or at greatly reduced prices. Often hatching eggs are exchanged for ordinary eggs; often also pedigree hens are supplied on condition that the hens of unknown descent are killed (Hungary). Another measure which allows of an influence on the poultry stock consists in establishing central incubation stations.

Birds for breeding come generally from the State Model Poultry Farms or from private farms controlled by the State or by the Associations. As regards improvement of the poultry stock, the division of the work between the breeders properly so called and the poultry keepers who do not hatch their own chickens has given good results and this movement deserves official support. This may be achieved in the most simple fashion: the State takes under its control the farms which give the best results, approves them as farms for selection or multiplication and encourages their costly work by grants or by regularly buying a large part of their products and distributing them to the non-breeding poultrymen. Organisations of this kind are to-day found in many countries, as appears from the reports in the above-mentioned monograph, which contains interesting information about those now working in Austria, Italy, Latvia, Finland, Bulgaria, Estonia.

A measure which is in force in, among other countries, Estonia and Finland, is worthy of mention. A breeding centre is recognised only after a competition

(1) See *L'Aviculture dans le Monde*, statistical tables, Annex I, Vol. 1, p. 241 et seq.

in which the rival farms must prove their capability. Thus in Estonia, for example, this competition lasts for one year, during which are subjected to examination not only the capacity of the director for stock breeding, but also the premises and plant, alimentation, development of the birds, produce, control and returns from the farm.

Besides this competition others also contribute effectively to raising the technical level of poultry husbandry and to accustoming the rural populations to modern methods. The American example of young poultry raisers' associations is worth copying, as by this means interest in poultry keeping as a business proposition is developed at an early age. A similar organisation exists in Poland : the young people receive at the beginning of the breeding season eggs for hatching or day-old chicks, then in autumn the birds they have raised are judged. In Poland there is also another type of competition in which all the birds of a farm compete, the directors of the farm meanwhile following courses of instruction.

This brief account shows clearly that the State is obliged to exercise an ever increasing influence on the formation of the poultry stock, particularly by methods of control. Selection aims principally at increasing the poultry output, but often a tendency to standardise the production over whole regions is observed, on similar lines to those followed in various countries for the breeding of cattle or other stock, to create " closed " poultry breeding territories in which only a given breed may be raised. In illustration of this fact may be recalled the Leghorns of Sonoma County in California, which has already been mentioned, and similar experiments may be reported in Hungary, Bulgaria, etc.

The basis of increased output is scientific selection, which in modern animal husbandry is based on tests of yield. In the poultry industry at present only the laying capacity is tested ; it is only rarely that in such tests the yield of meat is tested.

Laying competitions in most countries are to-day acquiring an official character. They are in fact in many countries under the control of official bodies or even under State protection. Often the establishments for laying competitions are founded and maintained, or at least subsidised, by the State or by some State organisation. It is no longer necessary to emphasize the importance of laying contests or of simple methods of control of laying for it is largely to them that the great progress accomplished in egg production is owed. The results obtained from such control methods are utilised through the institution of Flock Books, which are established by an official central organisation.

The influence exercised on the poultry stock and the efforts to standardise it greatly favour production ; but progress is often very slow and at the end only a part, large though it may be, of the technique of the poultry industry has been improved. In view of this fact many attempts have been made to modernise radically rural poultry keeping. As an example of an experiment of this kind may be cited the " Osnabrück programme ", which has been applied successfully in Germany and may serve as a model for the constitution of peasant poultry husbandry. In the Osnabrück district, which includes 10 associations with 536 communes, the poultry industry has been organized in accordance with uniform standards. In each association have been formed 4 model poultry farms

with a head of 200 to 250 hens, and 2 specialised farms which each keep 1000 head. The model farms, considered as an accessory branch of agriculture, are solely concerned with the production of eggs and buy the necessary day-old chicks. The farms which follow the Osnabrück programme must observe the following rules:— (1) keep one given breed; (2) use standard housing; (3) use a control mixed feed; (4) submit to control by the zootechnical officials and administration of the association; (5) the persons concerned must supply the necessary funds, the Ministry procuring a reduction on the rate of interest on loans. Further, experienced agricultural advisors are employed to give assistance to breeders.

The good results obtained with this system have led to its introduction in other associations in Prussia. A similar experiment may be reported in Bulgaria, where up to the present three model villages have been created in which poultry husbandry is practised in accordance with modern uniform standards; help is granted, not in money, but in the form of building material, breeding stock, etc.

### (3) *Measures for the control of poultry diseases.*

There are various diseases which inflict great losses on the poultry industry, the most serious of which are the infectious diseases, against which the individual breeder can safeguard himself up to a point, but which can be effectively controlled only over more or less extensive territories, which shows that State intervention in the matter is essential.

There are not great differences between the methods employed. In most countries the control of poultry epidemics is regulated by general measures of veterinary policy and, in many countries, the reporting of an outbreak of disease is compulsory. In other countries compensation is allowed for fowls killed to prevent spread of disease. In many cases serums are provided free or at reduced prices. In Mexico, where fowl cholera causes heavy losses, preventive vaccination is compulsory. In most countries also there are measures concerning the sanitary control of breeding stock.

The importing countries endeavour to obtain protection from the introduction of disease by establishing at the frontiers strict measures of veterinary policy for the imported poultry, which must in many cases submit to quarantine.

Poultry diseases are studied in numbers of scientific institutes which put up a valiant fight to protect this important branch of the national resources.

E. MOSKOVITS.

## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

NEW METEOROLOGICAL STATION IN FORMOSA. — It is reported in the *Meteorological Magazine* (London 1933, Vol. 68, p. 122) that a new Meteorological Station was inaugurated on 15 March 1933 on Mount Arczan, in the centre of the Island, for the purpose of collaborating with the Central Observatory of Taikohu and with the Meteorological Station of the Japanese Navy at Takao (established in 1931).

This new Station, which includes various buildings situated between 2100 and 2400 metres in altitude, will form a valuable contribution to the production of the meteorological Bulletins which are more and more valued by the rapidly developing military and commercial aviation and its equipment will allow of its also making a series of other scientific observations and studies.

NEW METEOROLOGICAL STATION IN MASSACHUSETTS, U. S. A. — According to information in the *Bulletin of the American Meteorological Society* of April 1933, this Station has been established on Mount Wachusett (615 m.) in the centre of the State of Massachusetts under the auspices of the Blue Hill Observatory of Harvard University and in connection with the activities of the International Polar Year. The Station is unusual in the absence of resident observers. They are substituted by a self-registering meteorographical apparatus which can run by itself for two to three months for recording the following data: — direction and velocity of the wind — atmospheric pressure — temperature — humidity.

T. B.

### Soil Science.

THE RELATIONS OF *BACILLUS MYCOIDES* WITH AMMONIFICATION, NITRIFICATION AND SOIL FERTILITY. — A series of interesting experiments has been made on this subject by M. TYAGNY-RYADNO at the Institute of Fertilisers and Soil Science, Moscow, using soil media by the method introduced by WAKSMAN and WINOGRADSKY, since laboratory methods using solutions only do not give reliable results, particularly in regard to ammonifying activity. The following were the principal results obtained:

(1) *B. mycoides* is an organism which energetically decomposes organic nitrogenous matter forming large amounts of ammonia. When soil was inoculated with a culture of this organism, active ammonification took place and the rate of nitrification was raised.

(2) The first effects of the inoculation of soil by *B. mycoides* were a parallel development of ammonification and nitrification; later the rate of ammonification fell off, but nitrifying organisms continued to transform ammonia into nitrate.

(3) Although nitrifying organisms display activity over the pH range 8.2–4.8, the acid limit is not an optimum; in fact, their greatest activity was shown in approximately neutral media. *B. mycoides*, on the other hand, in the experiments in question, increased the acidity of their medium up to pH 4.6. As a measure of self-defence *B. mycoides* are obliged to produce acid to counteract the excess of ammonia which they form. This reasoning compels the assignment of a more important part to *B. mycoides*, in respect of the solubilisation of phosphate rock, than to nitrifying organisms.

(4) The degree of nitrification in chernosiom soils (black soils of Russia) is a function of the activity of *B. mycoides*. By creating conditions appropriate to these bacteria, both ammonifying and nitrifying processes are likewise intensified.

(5) Fertilisation with dung is beneficial not solely on account of the nutrients supplied, but also because it leads to an increase in the numbers of *B. mycoides*, acting similarly to an inoculation with the bacteria.

(6) Phosphate rock when added to the soil stimulates ammonification and nitrification. These processes in turn produce acid which assists in making the soil's phosphate reserves available to crop plants.

(7) Small amounts of phosphate rock (0.3–0.5 tons per hectare) together with 5 or 6 tons of farmyard manure per hectare, by intensifying ammonification and nitrification, have led to considerable increases in the yields of grain and of leguminous crops,

and are the most rational manurial dressings for most of the regions of the U. S. S. R.  
(M. TYAGNY-RYADNO, *Journal of Agricultural Science*, London, 1933, Vol. XXIII, Part. 3, p. 335-358).

T. B.

### Soil Fertilisation.

THE NATIONAL INDUSTRIAL OFFICE OF NITROGEN, TOULOUSE, FRANCE. — In France the need for establishing and developing the nitrogen industry made its appearance at the close of the war, in the first place to provide for possible requirements for national defence, and secondly, to supply the farmer with the necessary nitrogenous fertilisers. The Germans were considerably ahead in this matter and in 1919 their factories at Oppau were already producing 100,000 tons of nitrogen per annum.

To meet this situation the French Parliament in 1924 passed a law instituting the National Industrial Office of Nitrogen (O. N. I. A.), which was to be a new type of public institution combining a strict financial control with the elasticity and independence necessary to a commercial undertaking.

This new idea of a public institution in the form of an industrial concern did not at first meet with universal approval, but experience has shown that the fears expressed were unfounded.

In 1925 was begun the building of a new factory from which the first production of ammonia was obtained in 1927; but it was only in 1929 that the O. N. I. A. begun its period of normal production. In 1931 a synthetic nitric acid factory and works for producing granulated ammonite were built. In 1932 the works were completed by the construction of a factory for the manufacture of sodium nitrate, and in that year 120,000 tons of this fertiliser were produced.

The O. N. I. A. is now provided with the latest technical improvements and possesses two large groups of factories:—

- I. Synthesis of ammonia from nitrogen and hydrogen.
- II. Manufacture of fertilisers, comprising four sub-divisions:—
  - (1) production of ammonium sulphate from gypsum;
  - (2) oxidation of ammonium to nitric acid;
  - (3) production of ammonium nitrate and granulated ammonite;
  - (4) manufacture of nitrate of soda.

After this brief historical survey, which is necessary for a full understanding of the rapid development of this important Office, we will now follow the successive developments which these various manufactures have undergone.

From the beginning of its activities the O. N. I. A. has combined the production of ammonium sulphate with that of nitric acid for the purpose of producing also nitrogenous fertilisers. In the choice between the alkalis, lime, sodium and ammonia, the Office decided on the last in view of the value of the association of ammonia and nitric acid obtained in ammonium nitrate, and it produced a daily output of about fifty tons of this salt. But as this salt cannot be used as such for manurial purposes the O. N. I. A. endeavoured to produce mixtures on a basis of ammonium nitrate fulfilling as far as possible practical requirements and was therefore led to put on the market in 1929 three nitric-ammonia fertilisers, namely:—

- (1) *sulphonitrate of ammonia*, composed of sulphate and nitrate of ammonia, containing 25.5 % of nitrogen, of which 19 % is ammoniacal and 6.5 % nitric.
- (2) *nitropotash*, a mixture of ammonium nitrate and potassium chloride, containing 16.5 % of nitrogen (half ammoniacal and half nitrate) and 25 % of potash.



(3) *sulphonitrate of lime and ammonia*, a mixture of ammonium nitrate and calcium sulphate, containing 16.5 % of nitrogen (half ammoniacal, half nitrate) which is granulated by a special process after being coloured green.

The name of this last fertiliser was found too complicated and was replaced by *calcammonitre*, or simply by *ammonitre*. This fertiliser rapidly found favour as a result of its remarkable fertilising properties, so that it came into competition with a similar product on the market under the name of *nitrammo*.

The nitric acid factory of the O. N. I. A. being found inadequate, the Office decided to build a modern factory at Toulouse capable of producing a daily output of 200 tons of pure  $\text{HNO}_3$ , and this was completed at the end of 1930.

At this point the agricultural crisis reduced the consumption of nitrogen to such an extent that the Office found itself obliged to reduce its production of ammonium sulphate; but in order not to reduce that of ammonia it decided to develop the production of ammonitre. Meanwhile the German trust, «*Interessen Gemeinschaft Farbenindustrie*», had started the manufacture of a similar fertiliser, but containing the lime as carbonate instead of as sulphate; the granular form of this product and its good keeping qualities seemed to promise a wide market. The O. N. I. A. having  $\text{CaCO}_3$  at its disposal as a waste product of the manufacture of ammonium sulphate from gypsum, was thus able to undertake the manufacture of a similar product. It retained the name of ammonitre which was already well known, but qualified it as «*granulated*». At first 100 tons a day were produced, but in view of the ready sale for this new fertiliser it was decided to double the production, which was achieved by the middle of 1932.

In order to utilise better its possibilities of producing ammonia and nitric acid the O. N. I. A. had now to find a market for only 120,000 tons of additional nitrogen per annum. It seemed advisable to achieve this by producing nitrate of soda and the Office has just started works capable of producing 200 tons of  $\text{NaNO}_3$  a day. With this product again it seems to have fallen on its feet, since certain producers of ammonium sulphate of northern France are today developing the manufacture of nitrate of soda.

With a view to utilising better its capacities of production and to adjust the balance of the various manufactures the Office has made the necessary provision for an annual output of 80,000 tons of each of the three fertilisers: ammonium sulphate, granulated ammonitre, and nitrate of soda, and is now prepared to produce new products, notably *nitrate of lime*, for which it has for some time had a scheme prepared.

France is thus now in possession at Toulouse of one of the most complete of the post-war industries. It is by necessity a State-owned factory, since its creation was primarily intended to supply possible requirements for national defence, but it is a State factory of an entirely new form as it enjoys complete autonomy, without which advantage it could not succeed for long. The State financial support being terminated, the Office must now be self-supporting, as is a private well-run factory. The results obtained in 1932, the year of crisis, show that this result has nevertheless been obtained and for 1933 a turnover is expected of upwards of 140 million francs.

The funds which the Office has at its disposal allow of still further increasing its production and thus of satisfying farming requirements to an increasing extent. It was soon able to outstrip the privately owned factories by the progress it has achieved in the manufacture of nitrogenous fertilisers, for it was this Office which introduced into France the manufacture of granulated ammonitre.

(CAZIOT P., *La Vie Agricole et Rurale*, Paris 1933, Nos. 28 and 29).

## Crops of Temperate Regions.

DOES FORCING OF PLANTS WITH ETHER VAPOUR CAUSE DEHYDRATION OF THE TISSUES? — Does ether vapour act as a dehydrating agent? In order to solve this problem R. QUETEL, the writer of an article in the *Comptes rendus de l'Académie des Sciences* (22 May 1933), determined the water content of branches and buds during the forcing process, by desiccation of the organs in an oven at 95° C. The results obtained show that during the time the plants were indoors after lifting (in this case from 9 October to 13 November) the tissues analysed maintained approximately the same water content as the corresponding tissues of the control plants at the same dates; this content does not vary during etherisation. Buds lose water to any considerable extent only at the moment of etherisation. In general forcing experts believe that pulling up the plant and bringing it indoors result in a partial desiccation of the tissues and that the dehydrating properties of the ether augment this desiccation and put a final check on the active life of the plant. But this was found not to be the case with the tissues tested. Laboratory tests have confirmed these preliminary observations. Ether vapour in the amounts used in forcing does not appear to have dehydrating power; at the rate of 0.4 gm per litre of air, ether led to no diminution in the weight of the fruits tested. The causes of the action of ether vapour must therefore be attributed to other reasons than the affinity of such vapour for water and a dehydration of the tissues.

D. K.

INFLUENCE OF MANURING ON THE BOTANIC COMPOSITION OF GRASSLAND. — J. WASBERG has studied the modifications observed in the botanic composition of grassland and their various causes. In a series of experiments carried out over 11 years in the experimental fields at Ramawa, belonging to the University of Riga (Latvia), he has studied the influence of manures on grassland plants, dividing the types of meadow into the following 6 groups: (1) Leguminosae — (2) Useful Graminaeae: *Festuca pratensis*, *Phleum pratense*, *Alpecurus pratensis*, *Dactylis glomerata*, *Avena elatior*, *Poa pratensis*, *Poa trivialis*, *Agrostis alba*, *Cynosurus cristatus* — (3) Graminaeae of little value: *Festuca rubra*, *Briza media*, *Agrostis vulgaris*, *Anthoxanthum odoratum* — (4) Useless Graminaeae: *Aira caespitosa*, *Nardus stricta*, *Festuca ovina*, *Avena pubescens*, *Holcus lanatus* — (5) Cyperaceae — (6) Weeds.

This classification corresponds to the capacity of the plants constituting each group to utilise the various nutritive elements. The close correlation existing between the various fertilisers, in different combinations, and the plants is demonstrated by the following results:—

Group I. — In the case of an unbalanced manure a potash fertiliser is better than others; phospho-potassic fertiliser has the most favourable effect on the development of the Leguminosae. In certain cases nitrogenous fertilisers or farmyard manure have little or no effect, or may even reduce the numbers of legumes, while the plants of the second Group (useful Graminaeae) are very sensitive to nitrogen, but if nitrogen is applied to the exclusion of other fertilisers or in an unbalanced form it has scarcely any effect on these plants. The influence of farmyard manure is less noticeable on the plants of Group 3 and still less on Group 4. A complete fertiliser has a definitely harmful effect on Group 5. Weeds (Group 6) develop vigorously in soils fertilised with manure or other nitrogenous fertiliser; phosphorus and potash are however deterrent to their development and multiplication.

(*Die Ernährung der Pflanze*, Berlin, 15 März 1933).

G. S.

IRRIGATION EXPERIMENTS WITH SUGAR BEET IN NORTH COLORADO, U. S. A. — The Department of Agriculture and the Colorado Experiment Station have carried out interesting experiments on the irrigation of sugar beet which have led to the following conclusions:— Periodic irrigation every 15 days during growth preserves the optimum humidity in the soil; this is preferable to supplying double the amount of water every 30 days. Irrigation early and late in the season has given the best results, specially, in dry years. The experiments are being continued.

(*Facts about Sugar*, New York, 1933, No. 2).

G. S.

METHODS FOR ACCELERATING THE MATURATION OF TOBACCO IN ITALY. — Dr. C. BUONOCUORE calls attention to the defects in the methods usually used for accelerating maturation in tobacco. He considers that the methods to be rejected are: uncovering the base of the plant, cutting back the roots, twisting the stems and removing part of the leaves.

Removal of a cortical zone of 2 to 3 cm at the base of the plant between 10 and 20 August is, in the region of Caserte near Naples, the most suitable process for reducing the vegetative cycle and bringing the leaf and seed rapidly and normally to maturity (3 to 8 days).

Bad weather (wind, etc.) will not harm the plants.

In all fields in which the cortical ring had been removed in good weather conditions the crop was harvested by the end of September; the average yield was 18 leaves per plant, while in the same conditions at the same time the yield of untreated plants was only 10 to 11 leaves per plant. After having successfully tested this method with several thousands of plants the cultivators will extend the system to all the tobacco plantations.

(*Bollettino tecnico del R. Istituto Sperimentale per la Coltivazione dei Tabacchi*, Scatati, October-December, 1932, No. 4.)

G. S.

TOBACCO GROWING IN RUMANIA. — The Administration of Tobacco Growing and Curing has for its principal purpose the promotion of the production of the indigenous tobacco for home consumption, its improvement as regards quality, and finding foreign markets.

The experiments and technical, financial, administrative and social activities of the Administration may be grouped as follows: —

(1) Introduction and sale of raw tobaccos; technique of the culture of tobacco, and its administration; receiving the tobaccos produced; technique of curing; handling of the tobacco after curing and administration of the central raw tobacco stores; supplying the factories with raw tobacco; creation of markets for surplus stocks and exportation proper.

(2) Supply of growers with equipment and financing the harvesting.

(3) Improvement of tobacco growing, assisting growers and insurance.

(4) Organisation and control of growers with a view to increasing the agricultural output.

(5) Encouragement of intellectual culture: study circles, evening meetings, lectures.

(*La Revue Internationale des Tabacs*, 8<sup>ème</sup> année, N<sup>o</sup> 79, Paris, mars 1933).

J. I.

## Tropical and Subtropical Agriculture.

**COTTON GROWING IN BRAZIL.** — Cotton has been extensively grown for centuries in Brazil, but it is only of late that steps have been taken to improve the cultivation. Brazil may be divided into four cotton growing zones, as follows :

- (1) *North Zone*, including the States of Amazonas, Para, Maranhão and Piahy.
- (2) *North-East Zone*, including the States of Ceara, Rio Grande do Norte, Parahyba and Pernambuco.
- (3) *Central Zone*, including the States of Alagôas, Sergipe, Bahia, Minas Geraes (northern part), Goyaz and a part of Matto Grosso.
- (4) *South Zone*, including the States of Minas Geraes (southern part), Espirito Santo, Rio de Janeiro, São-Paulo, Matto Grosso (southern part) and north Parana.

The principal species of cotton grown in Brazil are the following :

(1) « Moco » or « Serido » (*Gossypium vitifolium*). This species has a great importance in Brazil. It is a perennial, the plants lasting more than 20 years ; the fibres are soft and fine and may attain a length of from 35 to 45 mm. and exceptionally, 50 mm. The yield in lint is good.

(2) « Inteiro » or « Rim de Roi » (*G. brasiliense* or *G. conglomeratum*). A perennial shrubby plant : the upper portion of the branch is angular in section, the lower portion cylindrical. The leaves are large and glabrous with 3 or 5 lobes. The fibres are harsh, thick and lustrous, from 27 to 35 mm. in length. The yield in lint is poor.

(3) « Verdão » or « Riqueza » (*G. peruvianum*). A perennial shrubby plant. The leaves are large and stiff, those on the lower branches are undivided and those on the median or higher branches have from 3 to 5 lobes. The fibres are soft : the average length is 30 to 32 mm. ; the yield in lint is fairly good.

(4) « Quebradinho » or « Creoulo » or « Maranhao » or « Brasileiro » (*G. purpurens*). Shrubby variety, perennial, with smooth or nearly smooth branches, and large leaves, trilobed and with long leaf stalks. Fibres white, silky and soft.

(5) « Algodoi », « Ganga », « Algodao Vermelho » or « Macao » (*G. mustelinum*). This is a wild species producing brown fibres used in making awnings and a coarse textile known as « panno ferro ». The yield in lint is poor. The fibres are short, from 18 to 24 mm.

In the trade classification, Brazilian cotton is divided into three grades according to the length of the fibre :

Grade 1. « Fibra curta » (short fibre). Fibres from 22 to 28 mm.

Grade 2. « Fibra mediae » (medium fibre). Fibres from 29 to 34 mm.

Grade 3. « Fibra longa » (long fibre). Fibres of 34 mm. and over.

Each grade is further divided into three main types :

Typo 1 or Superior

Typo 7 or Sofrivel

Typo 3 or Good

Typo 9 or Ordinario

Typo 5 or Common

Four intermediate types may be marked off, numbered 4, 6, and 8 and a final type called Refugo or rejects.

The correspondence between the Brazilian and the American types is as follows :

Typo 1 : Middling Fair

Typo 6 : Strict Low Middling

Typo 2 : Strict Good Middling

Typo 7 : Low Middling

Typo 3 : Good Middling

Typo 8 : Low Middling

Typo 4 : Strict Middling

Typo 9 : Strict Good Ordinary

Typo 5 : Middling

Refugo : Good Ordinary

(Jose Maria FERNANDES in *O Algodão Brasileiro*, and Luiz GUIMARAES, Junior in *Apontamentos sobre o algodão*, publications of the Ministério da Agricultura, Indústria e Comércio, Superintendencia do Serviço do Algodão).

J. I.

CULTURE OF THE KAPOK IN JAVA (*Bulletin Agricole du Congo Belge*; J. E. OPSOMER; mars 1932). — The Dutch Indies supply nearly the whole of the world production of kapok; cultivation is almost entirely by natives, who produce 96 % of all the exported kapok. The principal regions of European culture are Pekalongan, Semarang and in general the central region of Java (7 556 ha); then come Krawank (1,596 ha) and eastern Preanger (1,337 ha). All the other regions of kapok plantations are less important. There are no statistics available for the acreage under native cultivation.

The kapok belongs to the family of the Bombacaceae and the subdivision of the Adansoneae, which contains a number of plants yielding a fibre known under the name of kapok; 3 genera are important as fibre producers: *Bombax*, *Gossampinius* and *Ceiba*; the last is the most important. *Ceiba pentandra* var. *indica* is a tree which may reach 30 m. in height and 1 m. in diameter; the young trunk is light green, later becomes grey, and is slightly spiny. The branches grow horizontally, three in each plane, the planes being 1 to 1.5 m. apart. The branches ramify little and the lower ones fall off up to a great height because of the strangulation produced at their insertion on the trunk. The leaves are palmate, with 5 to 8 lanciolate, shortly stalked leaflets. The principal root is deep, the wood is soft. The flowers are actinomorphic, borne on short peduncles grouped in short, many-flowered fascicles; the calix is persistent and green; the corolla is composed of five creamish-white petals; the fruit when young is a smooth green capsule, but becomes grey and woody later. The down is independent of the seeds; it is formed from the cells of the endocarp and when ripe is found free in the capsule. The capsules, which weigh about 25 gm, contain 15 to 17 % of fibre and 30 to 35 % of seeds. Two other species of *Ceiba* are also of interest: *Ceiba pentandra* var. *caribaea* (African kapok) and *C. trischistandra*, native of Peru.

*Cultivation and environment.* — The best land for growing kapok is a deep, permeable and mellow volcanic soil. The kapok cannot grow with stagnant water near the surface. The soil chosen should be a somewhat rich sandy clay. The plant requires a warm climate and not much rainfall; it needs a rather long dry season for successful fruiting and maturation, so the distribution of the rains is most important. The kapok grows up to 2000 metres in altitude. The choice of the variety is influenced by the conditions of the locality and the type desired. Seed should be taken from well grown, vigorous, productive trees, bearing large capsules. The fresh seed has a germinating power of 95 %. Seed beds are necessary, sheltered by a sloping roof on the west, on which the seeds are sown uniformly by hand, then pressed into the soil with the palm of the hand. Care consists in watering daily if the rainfall is insufficient to keep the soil moist. The seedlings are planted out in the nursery when the lower half of the stem is bright red and there are no other leaves besides the cotyledons. They are spaced at 50 × 30 cm.; planting is done in the morning before the hot hours of the day. Care consists in hoeing and attending to drainage. With a spacing of 50 × 30 cm  $\frac{1}{6}$  hectare is necessary to plant 10,000 seedlings. Growth is very irregular in the seed bed. It is important to sow as early as possible (November or December) in order to be able to plant as early as possible in the following year.

*Vegetative propagation.* — The kapok is readily propagated by grafting or budding, but the former method should be rejected as it uses too much wood and each tree can supply only a limited amount of budwood. Budding is generally done in the nursery; it may be done when the plants are six months old. Where the bud has not taken a fresh bud may be inserted on the opposite side. The kapok is propagated also very easily by cuttings, even if matured wood is used.

*Planting.* — Holes are first dug of  $60 \times 60 \times 60$  to  $75 \times 75 \times 75$  cm.; these are left open for some time and closed only shortly before planting, incorporating a chemical or organic fertiliser. The normal spacing allowed is  $8 \times 8$  m., the branches always exceeding 6 m. in length; isolated kapok trees are always the finest. Before planting the plants are pruned by skilled workmen who leave 60 cm of stem and 45 cm. of root; the lateral roots are cut back to 10 to 15 cm.; any wounds are dressed with tar. Planting presents no special features. One month after planting the young plants or «stumps» shoot again; only the most vigorous terminal shoot is kept, those forming at the base of the stem are suppressed. During the first years annual crops are sometimes grown in the young plantations; this causes no harm at this stage provided that the plants are not planted too near the kapok trees and do not wound the roots. It is very generally admitted that the kapok in pure culture does not pay; often it is grown as a secondary crop. When widely spaced it may be grown without harm to a principal crop of cacao or coffee.

*Cultivation.* — In pure culture cultivation may consist only in destroying the «alang alang», which is a very exacting plant and liable to fire, and sowing a Leguminous cover crop of one of various species, such as *Mimosa invisa*, *Centrosema* sp., *Leucaena glauca*, etc. Pruning of the trees consists only in removing sucker growth. Fertilisers, as with other crops, give good results.

*Harvest.* — The first crop is generally obtained four years after planting; the tree is in full production at 14 to 15 years. In Java the kapok trees flower for the first time towards 15 May. There are two or three further flowerings, two to three weeks apart. The fruits require three months for ripening. Cropping begins in September and continues until December; the capsules must be picked as soon as ripe or else they will open and the kapok be carried away by the wind. A fully grown tree bears an average of a thousand capsules. The capsules are picked by means of long hooked bamboos. When picked the fruits are taken to small sheds distributed about the plantation, where the fibre is separated from the shell and from as many as possible of the seeds. The kapok is immediately sorted into two grades. The crude kapok is then carried in bags to the factory. The labourers are paid on various systems: according to the weight of kapok delivered at the factory, or to the number or measure of fruits picked.

D. K.

INVESTIGATION OF FRUIT PRODUCTION IN MALACCA (*The Malayan Agricultural Journal*; G. D. P. OLDS, February 1933). — After indicating briefly the various methods used for investigating the state of an industry, the writer shows that these methods are inapplicable to agriculture in which only the Survey Method can give exact results. This method adopts as its basic principal that in any one industry which has been in existence for a number of years there must be a number of established practices which are of definite value to that industry and which are the results of accumulated experience. A large number of units of production, whether small holdings, farms or estates, are selected for study. The number is large enough to permit of its being split up into groups of units which show similar characteristics.

such as those of soil, climate, rainfall, distance from market, methods of production and prices obtained. The information required for the Survey is obtained by personal visits to the holdings under Survey and is supplied by the producer himself.

In Malacca territory 154 holdings were surveyed, this being equivalent to two holdings per mukim. The information obtained may be classed under two headings as follows :—

(1) Information which was obtained as a result of observation and personal inspection during the field work ;

(2) Information which was obtained from the field forms used.

The following conclusions may be drawn from the information collected :

(a) Fruit growing as at present practised by the peasant is a primitive industry ;

(b) The marketing of the produce is not at all satisfactory, for the following reasons :— the fruit is grown mainly for home consumption ; the indebtedness of the producer ; the ignorance of better methods of husbandry ; the smallness of the units of production ; the presence of an excessive number of middlemen between the producer and the consumer.

(c) There is a local market for many Malayan fruits provided they are of good quality.

(d) Few Malays seem to consider fruit production seriously as a source of revenue.

(e) The present time is admirably suited to propaganda for fruit growing.

(f) The Survey Method of investigation has proved to be satisfactory.

The following suggestions are made for the improvement of the industry :—

(1) Good planting material at low prices should be made available to cultivators.

(2) Instruction in fruit production methods should be part of the course in school gardens.

(3) In conjunction with the Cooperative and Administrative Departments an attempt should be made at solving the problem of the indebtedness of the producer.

(4) The marketing systems should be improved.

(5) Instruction in packing and grading methods should be given to the peasants.

(6) The possibilities of extending the markets for Malayan fruits overseas should be investigated.

D. K.

## Agricultural Engineering.

AGRICULTURAL MACHINERY AT THE GERMAN AGRICULTURAL SOCIETY'S SHOW AT BERLIN (MAY 1933). — At the great annual Agricultural Show, which was held this year at Berlin from 20 to 28 May, there was an extensive display of farm machinery. Though at the 1932 show at Mannheim the machinery section was reduced on account of the economic crisis, this year it had regained its old importance, giving a complete survey of the development and tendencies in the construction of farms machines in recent years.

In spite of the spirit of greater confidence in the future, various changes due to the difficulties encountered by the farm machinery firms in Germany, as elsewhere, were noticeable. Some of the well known firms, for instance, have been obliged to sell out in favour of other firms, such as the " Hanomag " (" Hannoversche Maschi-

nenbau-Aktiengesellschaft ") which has rented its works to a new firm, the " Hanomag Automobil-und Schlepperbau ".

The heavy duties, direct and indirect, levied on petrol have resulted in a reduction in the use of the internal combustion engine in favour of heavy oil engines, particularly for tractors.

It has been found that the most convenient power for tractors on the medium sized farm is about 38 h. p. Messrs. LINKE-HOFFMANN-BUSCH, who formerly built only very powerful tractors, this time showed also a new type of tracklaying tractor of 38 h. p. worked by a Diesel engine. A simple device for starting, which is always difficult in the Diesel engine, has been invented by the firm of DEUTZ. This utilises the force of inertia of the disengaged flywheel, which is started by a simple handle ; when the rate of revolution is sufficient the flywheel is connected to the engine and the force of inertia of the flywheel is sufficient to produce the pressure required to effect the first explosions in the engine.

In regard of tractor wheels, among the novelties is observed a wheel which is characterised by the fact that on both sides of the rubber tyre are strakes which can be raised or lowered in groups. The strakes being arranged laterally on the rim of the wheel do not become clogged by mud in the fields as do those situated on the rim itself.

An American firm shows another solution of the same problem of the passage from field to road and *vice-versa*, namely, a tractor fitted with low pressure pneumatic tyres. The question of pneumatic wheels for tractors is not however solved ; it is still in the experimental stage and no definite decision has yet been arrived at. The advantages of pneumatic tyres, if they could be used also for working in the field, would be enormous, but it has not as yet been possible to eliminate all the drawbacks and difficulties involved.

Farms requiring power but unable to purchase an electric or internal combustion engine will be interested in a new type of horse gear which was on show and which gives a 90 % efficiency. The principle of this horse gear was described in the *Monthly Bulletin of Agricultural Science and Practice*, 1933, No. 2, pp. 80-81. For small farms having electric power available, small electric engines have been developed which are easily transportable and can be applied to the various farm implements ; these engines are of the monophasic induction type up to 1 h. p., can be connected to the lighting current and are hand-started.

Small motors were installed on many reaper-binders, driving the working parts directly, thus reducing the traction force required. This is an advantage with animal traction, though with a tractor the work will be simplified if a power take-off is used for the transmission of power from the tractor to the working parts of the machine.

In mowers most firms have adopted oil bath gearing. Some tend to exaggerate this by perfecting the gearing out of all proportion to the other parts of the mower, which will be worn out when the gearing is probably still effective.

In the development of the construction of farm machines it may be often observed that in attempting to reach perfection practical good sense is outstripped and reasonable limits are returned to later.

Thus to-day the builders are absorbed in perfecting farm carts, having proved that the best construction allows of saving 50 % and upwards of the traction force. In the Show were exhibited carts of all kinds with pneumatic wheels, with broad steel rims, and tracklaying wheels. Some carts were built completely of steel, and appeared rather too heavy. It does not seem desirable to use steel for every purpose in place of wood. Repairs to the body of the cart, for example, are more difficult, in steel construction



than in wood. The best solution is perhaps a combination of a very low steel framework and pneumatic or steel or tracklaying wheels with a wooden body. Competition between steel and wood would not appear of great importance, both having undoubted advantages, and neither having definite superiority. In 1932 the principal machinery building firms tended to use the all-steel threshers, but this year many have returned to the use of wood for the construction of various parts.

The Show was so extensive that it was not possible in a short time to obtain a complete idea of all the progress achieved during the year in the construction of German farm machinery, but in most machines considerable improvements were observed, and considerable perfecting of detail to render the machines always more adapted to their purpose.

A great part of this continuous progress in farm machinery and in its rational use is undoubtedly due to the initiative of the "Reichskuratorium für Technik in der Landwirtschaft" and to its close collaboration with the "Deutsche Landwirtschaftsgesellschaft" and with all the German agricultural engineering research institutes and the farm machinery builders, which collaboration has greatly helped to prevent the industry succumbing to the crisis through which it has passed.

H. J. H.

COMPETITION OF APPLIANCES FOR THE MECHANICAL HARVESTING OF OLIVES AT SFAX (TUNIS), 16 TO 17 DECEMBER 1933. — The olive harvest at present requires a considerable supply of labour, which becomes each year increasingly difficult to obtain. The cost of the harvest is also very heavy, varying each year about 50 million francs for Tunisia and some hundreds of millions for the Mediterranean Basin. A reduction in these costs would considerably lower the cost of the oil and would thus facilitate its marketing and increase the profits of the producers.

The problem which confronts the inventor is to produce harvesting appliances, suitable for use in medium and large olive plantations, which will allow of harvesting with a reduced supply of labour.

Three successive competitions for mechanical olive harvesters have been held in January 1930, January 1931 and December 1931 in the region of Sfax. But in spite of the large prizes offered no satisfactory results have been obtained, the apparatuses presented not having solved the problem, namely: large scale work and complete gathering of the olives on the exterior and interior of the trees without damaging the young shoots which will bear the fruit of the following year.

In order to find a practical solution of the problem as rapidly as possible the Office of Agricultural Research and Publicity is organising, with the cooperation of the Chambers of Agriculture of Tunis and of the Mixed Chambers of Central and Southern Tunisia, a new competition for mechanical appliances for the harvesting of olives, which will take place at Sfax on 16 and 17 December 1933.

We give below an extract from the regulations for the competition, for which will be awarded cash prizes up to 50,000 francs.

The competition will have only one section: large scale apparatuses (machines worked by engine power, capable of harvesting the olives in two crops, corresponding to the different periods of ripening).

Only automobile or tractor-drawn apparatus will be accepted. Entries must fulfil the following conditions:—

- (1) It must be possible to effect the harvest rapidly and cheaply with a limited amount of unskilled labour (two or three men);
- (2) No damage can be allowed to the fruiting spurs of the following year;
- (3) The gathered fruit must be clean and undamaged.

The price of the apparatus, its depreciation rate, facility of handling and ingenuity, and the possibility of rapidly effecting any necessary repairs, will all be taken into consideration by the judging committee.

*Only appliances constructed and equipped with a view to practical harvesting in the normal olive trees of Southern Tunisia are eligible to compete for the awards.*

In addition to the machines presenting the preceding characteristics the Office reserves the right to allow to be examined by the judging committee more simple appliances presenting some practical innovation for the mechanical harvesting of olives, the principal of which may be retained and applied in the construction of larger engine-worked machines. The appliances which are thus retained may receive a special prize for encouragement, but will not compete with the other entries for the competition.

The competition is open to all engineers, builders, representatives of farm machinery and other persons, without distinction of nationality or residence.

Entries from intending competitors should reach the President of the Office of Agricultural Research and Publicity, Direction General of Agriculture, Tunis, before 15 November 1933. Entries should be accompanied by indication of the name and nationality of the competitor or competing firm, the exact postal address, designation and sale price of the apparatus presented. Entries should be accompanied if possible also by plans and specifications, or, failing that, a detailed description of the apparatus.

G. R.

## Animal Husbandry.

PROCEEDINGS OF THE Vth WORLD'S POULTRY CONGRESS, ROME, SEPTEMBER 1933.  
— On 7 September, in the presence of the Head of the Government, His Exc. the Minister of Agriculture of Italy opened the Vth World's Poultry Congress. This Congress, organised by the Italian National Committee and by the Italian Ministry of Agriculture with Prof. A. GHIGI, Rector of the University of Bologna as Commissary General, was held on the initiative of the World Poultry Science Association (W. P. S. A.). The Congress was attended by 1200 persons belonging to 43 nations, and was of great interest from the scientific point of view. The 162 Reports and communications were grouped as general reports or under six sections as follows: General and Genetic Questions – Physiology, Nutrition and Breeding – Hygiene and Diseases – Instruction and Organisation – Economic Problems and Trade in Poultry Products – Rabbit Raising. The large number of reports makes it impossible to give an exhaustive account of the work of the Congress, and all that is proposed here is to give some idea of certain reports which seem to possess special interest, grouped according to subject, while not following entirely the classification in sections.

Questions of breeding, problems of the different breeds and genetic questions were very fully dealt with by the Congress. In his report on the origin of farm breeds of fowls, Prof. A. GHIGI concludes, as the result of his own investigations and those of other specialists, that it is probable that all the wild species of *Gallus*, and not one only, have participated in the formation of our domestic fowls. Detailed communications on different breeds of fowls were presented by:— F. TRITTHART (Austria) on the Styrian fowl, Prof. A. MAGLIANO (Italy) on the curly-feathered fowls of Sicily, Prof. G. S. CHLEBAROFF (Bulgaria) on the native Bulgarian poultry.

Interesting communications on the inheritance of sex-linked characters and of plumage colour in Leghorn fowls were made by Prof. F. A. E. CREW (Scotland) and

M. T. FATTORI (Italy). I. AXELSSON (Sweden) reported on the influence of heredity on the size and form of the single comb in White Leghorns, Rhode Island Reds, and Barnevelders. Interest also attaches to the observation made by E. ROBERTS and I. E. CARD (United States) in the course of their crossing experiments between the Dark Cornish and White Leghorn breeds at the Illinois Agricultural Experiment Station, that the Leghorn cocks do not transmit broodiness as a sex-linked character; the F<sub>1</sub> females from Leghorn males did not exhibit broodiness to such a high degree as the descendants of the Cornish males.

Prof. R. GIULIANI (Italy) reported that by crossing with the Leghorn breed, it was practicable to increase considerably the fecundity of the common fowl. The same result appears from an enquiry made by M. GUARDASONI (Italy). M. KAZUNOBU KIMURA (Japan) contributed the results of some statistical studies on egg production of White Leghorns. It appears from his investigations that there is close correlation between the production of nearly related individuals.

For the practice of breeding, the productivity of individuals naturally possesses the maximum interest. E. BORGIOI (Italy) has used the Hogan system to determine the relations between the external configuration and the productivity of the individual and is of opinion that he has obtained exact results in this respect. The same question has been treated by R. KUETHE (Germany). L. WEINMILLER (Germany) admits on the other hand that the Hogan method only serves to identify the non-laying birds, while the selection of the best laying hens can be effected only by means of trap nests. L. WEINMILLER also made interesting reports on methods of testing productivity in Germany and on the work of the Flock-book societies. A communication from Captain A. von BURGSDORFF (Germany) gives many details on the organisation of these institutions in Germany. O. E. SHEAR (United States) describes the results of "Record of Performance" tests in the States. In recognition of the difficulties inherent in the fact that in the different countries the flock books make use of varying technical expressions, the Congress approved the following resolution: "The Vth World's Poultry Congress recommends to the World Poultry Science Association that a Committee be appointed by that Association to draw up an international list of terms to be used as a world-wide terminology in connection with national breeding programmes".

In his report, S. TAUSSIG (Austria) recapitulated the different rules for the conduct of egg-laying trials. The differences between the different methods employed make it impossible to compare the results obtained in the various countries. Taking the proposals made by S. TAUSSIG as a basis, the Congress adopted a resolution according to which it "calls the special attention of the Council of the W. P. S. A. to this subject, recommending that the possibility be considered of accepting the proposals outlined in this report in connection with the delegation to a specially appointed committee of the work of preparing – possibly with collaboration of the International Institute of Agriculture – draft regulations for these Competitions, such draft to be submitted to the examination of the VIth World's Poultry Congress.

This Committee, appointed by the Association, should suggest to the various countries the advisability of adopting 48 weeks as the duration of the competitions, and two ounces (or the equivalent) as the minimum weight of eggs to be counted".

An important place was occupied by the recent research work accomplished in physiology. In his general report, E. BALDI (Italy) reported on the present position of the knowledge of endocrinology and on the practical utilisation of the results of these researches. Other communications also dealt with special endocrinological questions; G. COLOMBI reported on some histological investigations of the hypophysis, comparing good and bad layers, and on the positive results obtained by making

injections of pituitary hormone. L. W. TAYLOR (United States) reported on the use of sex hormones in determining the genotype of crossbred fowls.

Other communications of a physiological character dealt in particular with the problems of the physiology of development, formation of the egg and incubation. SEIGO SHIBATA (Japan) spoke of investigations on ovulation in fowls; the object being to determine the relations between the time required for the formation of the egg and the time of laying. D. PHILPOTT (Free State of Ireland) examined the factors influencing the variations in the total weight of the egg and of its component parts. The physiology of incubation and in particular the influence of temperature and of sunlight on the results were the subject of reports of E. W. HENDERSON and R. PENQUITE (United States), L. KAUFMAN (Poland) and finally of J. B. SMITH (Canada).

A. CAZZANIGA (Italy) discussed the lime requirements of the embryo and the utilisation of the lime of the shell to meet these needs of the chick.

Much of the work of the physiological section was concerned with the scientific aspect of nutrition. The general report of Prof. MANGOLD (Germany) summarised the recent investigations and present day knowledge on the most important processes accompanying the ingestion of food and its digestion in the case of the fowl. H. SIMMONET (France) in his general report gave a systematic account of the part played by vitamins in development and their influence on spermatogenesis, of energy metabolism and of deficiency diseases.

Supplementing these general reports, a large number of sectional papers dealt with the details of the science of nutrition of the fowl, the theoretical studies of metabolism, the effect of mineral substances, of ultraviolet rays and of a large number of particular feeds.

It is impossible to deal with the numerous reports relating to the problems of hygiene and veterinary medicine. The results of the discussion of these reports led to the passing of a resolution by the Congress in which it drew the attention of the W. P. S. A., of the Governments and of all concerned to the serious losses suffered by the poultry industry through the incidence of poultry diseases.

A large proportion of the communications dealing with economic questions and the trade in poultry products related to: the egg from the commercial standpoint, egg testing by different methods, egg preserving and the various marketing methods in a number of countries (especially in the United States). The paper contributed by F. MANNES (Belgium) dealt with the standardisation of eggs and the advantage resulting from this alike to producers and dealers. The problems of the trade in poultry meat, the commercial grading and conservation of this product, were treated more briefly. Communications on this subject related to organisations in Switzerland, Canada and the United States.

The earning capacity of poultry raising depends naturally in the first instance on local conditions. W. RIETH (Germany) undertook in his paper to examine the different basic conditions of poultry farming in the different countries, taking the countries in two groups: (1) those in which poultry are raised on the intensive system; (2) those in which the methods are extensive. The conditions of poultry farming are determined by a series of factors of production and of marketing possibilities which also affect the type of farming. Other reports deal with questions of the earning capacity of poultry farming taking as basis the position of poultry husbandry in any particular country. G. GIUSTI (Italy) presented some calculations on the cost of producing fowls on the experimental poultry farm of the Royal Higher Agricultural Institute of Milan, and J. BRAGHINA (Rumania) submitted calculations on the profits of poultry raising on the small farms of Rumania.

The national reports proved of great interest, *i. e.*, those which described the present position of the poultry industry in a particular country, the recent problems, the organisation and modernisation of poultry farming as carried out in late years. Mention may be made in particular of the reports on Great Britain (P. A. FRANCIS), the United States (J. A. HANNAH), Bulgaria (Prof. G. S. CHLEBAROFF), the Netherlands (D. S. HUIZINGA), Algeria (Prof. J. BERNARD). An interesting account of poultry breeding research in Britain was given by M. S. PEASE.

Practical illustrations of the most recent methods for the encouragement of poultry raising were given in a number of reports, including those describing methods followed in Japan by the Japanese Ministry of Agriculture, in Germany by O. HÖPPING, in Belgium by V. PULINCKX, in the United States by G. S. VICKERS and P. E. JONES and finally the report on the well-known Osnabrück programme by Dr. MÜHLBERG.

General reports on questions of instruction and advisory work were supplied by R. RÖMER (Germany) and by Prof. S. CASTELLÓ (Spain). A communication by H. E. BOTSFORD illustrated the practical treatment of these questions in the United States, and B. SCHÖSSINGK reported on the Advisory Service for poultry breeders in Germany.

Organisations of poultry breeders and the work of these bodies in the Netherlands and in Italy formed the subject of two interesting communications by P. J. VAN HAAREN and R. RINALDI CERONI respectively.

Besides poultry questions, the Congress dealt also with problems of rabbit husbandry. A general report was presented by H. NACHTSHEIM (Germany) on the present position of knowledge as to the origin and formation of breeds of rabbits. This problem is the more interesting as the rabbit is the animal about which more is known from the standpoint of the hereditary factors than of any of the animals regarded as farm stock. In this way the key is possessed for future production of breeds and, at least by the method of combination, new breeds may be systematically formed. The other general report on this subject, that of Prof. MAIOCCO (Italy), dealt with the economic side of rabbit breeding. He showed the necessity for a propaganda for a wider consumption of rabbit flesh and for a better organisation of the rabbit fur trade, both of which will give an impetus to more intensive development of rabbit breeding. Section 6 dealt exclusively with questions of rabbit breeding, genetic questions (number of chromosomes, sex determination, sex-linked characters, characteristics of the different breeds) diseases of rabbits, and finally economic problems.

As supplementing the Congress, a World Poultry Exhibition was organised in Rome at the same time. There were numerous exhibits of poultry, rabbits and poultry raising equipment. The official representations of the different Nations taking part organised, in addition to exhibits of fine specimens of living birds, special exhibits illustrating the organisation of poultry farming and of the trade in poultry products in their respective countries. The Exhibition was held amid the picturesque setting of the ruins of the Markets of Trajan and excited not only very great interest among poultry specialists and experts, but also among the public at large.

E. M.

## Agricultural Industries.

### Industries of Plant Products

CONDITIONING OF MAIZE FOR STORAGE AND EXPORT. — At Flacq in the island of Mauritius a factory has been built in which maize is dried by hot air in such a way that it keeps indefinitely. The drier is housed in a building constructed mainly of steel, with walls and roofing of galvanised iron. Length of building, 24.4 m — Width of building, 11 m — Height of walls, 6 m — Total height, 9.6 m.

The heads are carried by a cup belt on to a platform above the sheller, then pass through a trap-door on to an inclined plane which carries them to the mechanical sheller. The stripped rachis passes along a conveyor belt to the furnace, where it is used as fuel.

A small steam generator of local manufacture is used, and a 20 h. p. heavy oil engine. The remaining parts of the plant are of the « Niagara Machine Sheller » type, of the United States. After shelling the grain is carried by a chain with scrapers over the first compartment of the oven, from which it slides down an inclined plane. The grain remains 75 minutes in this first compartment, which is kept at a temperature of 82.2° C. This interior temperature is produced by means of coils in which circulates steam driven from the generator by a special fan. The carrying capacity of the oven is 500 kilos of maize grain.

After remaining for 75 minutes in the first compartment of the oven the maize is completely dried and passes into the second compartment, where it is reduced to a temperature of 40° by cool air ventilation. It is then put into open tanks by means of a chain of scrapers.

Finally the dried and cooled grain is stored in 4 huge hermetically sealed steel vats, containing altogether 70 tons of shelled maize. The grain can remain indefinitely in these closed vats, from which it is taken for bagging as required.

(*Les Produits coloniaux et le Matériel colonial*, Marseille 1933, N° 108).

G. S.

MANUFACTURE OF SOLVENTS AND OTHER PRODUCTS FROM GRAIN OF MAIZE. — The Commercial Solvents Corporation of the United States utilise all parts of the maize grain, but, as it is only the starch which is converted into solvents, the corn is ground and by various milling operations the kernel is separated into bran (for use as a stock feed), « germ » (for extraction of oil and stock feeding) and starch. The fermentation process, which is protected by a series of patents, converts the maize starch by means of *Clostridium acetobutylicum* into acetone, butanol and ethyl alcohol. The fermentation produces also large quantities of

(1) CO<sub>2</sub>, which is converted into solid carbon dioxide, or « dry ice », for use in the cold storage industries ;

(2) hydrogen, free from sulphur and phosphorus, which separates readily from the CO<sub>2</sub> and so constitutes an excellent raw material for the associated industries of (a) manufacture of methyl and ethyl alcohols and higher synthetic alcohols; (b) manufacture of synthetic ammonia ; (c) hydrogenation of maize oil and other animal and plant fats and oils ; (d) use in various industries.

*Industrial fermentation with Clostridium acetobutylicum on a large scale.* — The manufacturing processes may be divided into four steps: the preparation of the maize, the propagation of the bacteria, the actual fermentation and the distillation of the products.

The crude starch is mixed with water and the mixture is transferred to closed tanks where it is heated at high temperature until a thick paste is formed and the mass is completely sterilised. From these « cookers », which have individual capacities of 10,000 gallons, the paste is forced under pressure through water-jacketed coolers which reduce its temperature to 98° F., and thence it passes into the actual fermenting tanks which are of 50,000 gallons capacity. In the tanks progressive fermentation with *Clostridium acetobutylicum*, seeded from carefully prepared cultures, takes place. Fermentation is completed after 48 hours. By fractional distillation the components are sepa-

rated, and butanol, acetone and ethyl alcohol are formed in the ratio of 6 parts of butanol to 3 parts of acetone and 1 part of ethyl alcohol.

(*Chemical Age*, London 1932, No. 692).

G. S.

THE ESSENTIAL OIL OF PINE AND ITS PROPERTIES. — In the United States an industry organised on modern lines has grown up around the forests of *Pinus paludosa* Miller for the utilisation of the resin-containing timber. In addition to other products are obtained a colophane identical with that obtained in France from the cluster pine, and a pale-coloured essential oil giving off an agreeable odour, which is soluble in alcohol, petrol, benzine and all the usual solvents. This oil is already widely used in the manufacture of paints, as a solvent of rubber, etc.

Research carried out at the Pharmaco-Therapeutic Institute of Leyden in the Netherlands has proved that the essential oil from the pine possesses a higher bacteriocidal power than phenol and cresol. It kills with greater or lesser rapidity *B. typhosus*, *B. coli*, *B. proteus*, *B. pestis*, *Streptococcus* spp. and *Pneumococcus* spp., etc. In an experiment the tuberculosis bacillus inoculated into a guinea pig was killed in 30 minutes by a 1 % solution of pine oil.

By mixing pine oil with other essential oils polyvalent disinfectants may be obtained which would be of great value for promoting public health.

(GATTEFOSSE R. M., *La Parfumerie moderne*, Paris 1932, N° 12, p. 599 - 603, 4 fig.).

G. S.

### Agricultural Training.

ROYAL TECHNICAL AGRICULTURAL INSTITUTE OF ROME (Regio Istituto Tecnico Agrario — Address: Tenimento Sant'Alessio, Via Ardeatina, Rome). — By virtue of the Law of 15 June 1931, No. 889, this new title is given to the Royal Medium Agricultural School of Rome (Regia Scuola agraria media).

The training includes :—

(1) Preparatory Course of one class, lasting 1 year. The pupils enter for this course without examination.

(2) Advanced Course of four years' duration (in direct correlation with the Lower Course of the Technical Institute), for admission to the first class of which an examination is required. The curriculum includes the following subjects :— Italian literature, history, mathematics, physical training, agriculture, rural economy, farm accountancy, animal husbandry, natural sciences, plant pathology, general chemistry, agricultural chemistry, agricultural industries, agricultural mechanics, rural building and design, topography, rural law, religion.

At the end of the Advanced Course the pupils who are successful in the examination receive the diploma of *Agricultural Expert*. The Agricultural Experts may attend one of the following specialised annual courses :— viticulture and oenology, olive growing, fruit growing, horticulture and gardening, animal husbandry and cheese making, mountain economy, tobacco growing, colonial agriculture. After an examination the certificate of *Specialised Agricultural Expert* is given.

The Agricultural Experts may enter the Higher Agricultural Institutes (Law of 18 June 1932, No. 812, and Decree of 8 May 1933, No. 507).

They may act as Director of the medium farms and as Assistant-Director on the large farms, as expert in the Agricultural Schools and as expert in the Travelling Schools of Agriculture.

G. R.

## Agricultural Research.

AGRICULTURAL RESEARCH IN BRITISH INDIA. — The accompanying map illustrates and completes the article with this title which appeared in the preceding number of this *Bulletin* (No. 9, pp. 374-377). The map has been prepared from the information supplied by the Departments of Agriculture of the various provinces of British India and by the Agricultural Associations. In spite of the difficulties inherent in a work of this kind it has been found possible to establish with sufficient accuracy the location of each Station. To enable the reader to comprehend at a glance the relative importance of each Station the following conventional signs have been adopted :— a large circle represents an Imperial Experiment Station — a square represents a main Station directed by the provincial Government — a small circle represents an ordinary Station directed by the provincial Government — a triangle represents a Station for the bulking of seed — a lozenge represents a privately owned Station.

In the second edition of the monograph '*Agricultural Research in the Tropics*', which is now in preparation, a brief account will be given of the organisation, work, etc. of each of the Stations indicated on the map.

J. L.

## Rural Hygiene.

MALARIA : ITS PREVENTION AND CURE. — The third general report of the Malaria Commission, published by the *Bulletin Trimestriel de l'Organisation d'Hygiène de la Société des Nations* (Vol. II, No. 2, June 1933), reviews the methods now used in the treatment of malaria. We give below some of the conclusions of this study, which is of fundamental hygienic importance, particularly in tropical and subtropical regions.

The Commission emphasizes that from a medical point of view the question of rivalry between natural and synthetic drugs does not arise. The production of synthetic quinine, or of other synthetic drugs having an action and toxicity sufficiently near to those of quinine for them to be used as substitutes for quinine, would constitute no progress for the clinical treatment of malaria. From the medical point of view, what is required of a new product is that it shall be effective in curative and preventive treatment wherever quinine is unobtainable, and that its use shall not entail risk of producing toxic symptoms ; the latter condition is as important as the former. The various methods may be summarised as follows.

*Treatment against the sporozoite form* (prophylaxis proper). — No remedy is known which when taken in harmless doses can be guaranteed to act as a genuine prophylactic agent.

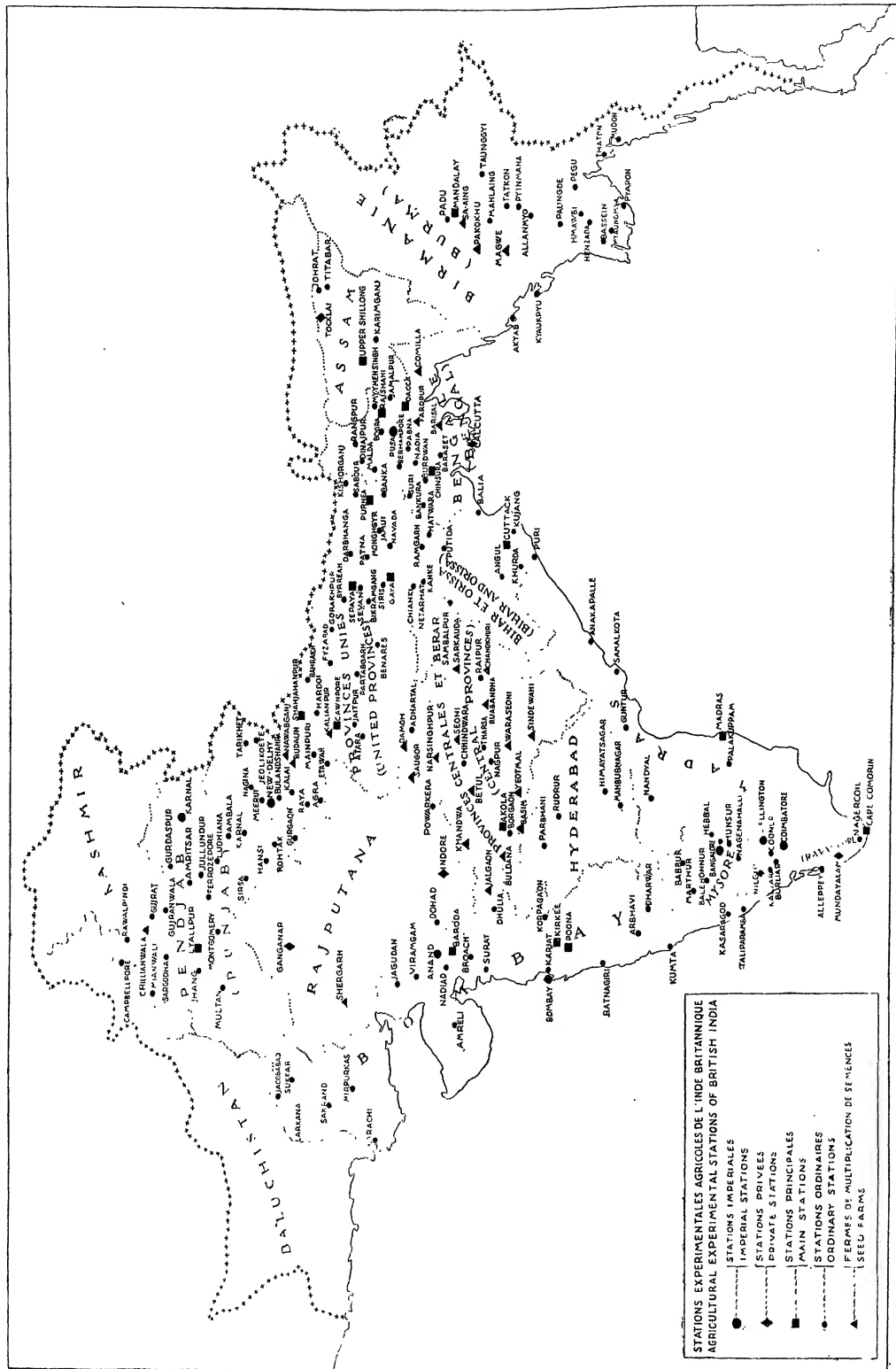
*Clinical prophylaxis.* — The Commission is of the opinion that for this purpose quinine is effective and constitutes the best remedy. The best method of use consists in administering a daily dose of 0.4 gm. This dose should be taken during the duration of the stay in a malarial region and, to prevent relapse, for several months afterwards. In a daily dose of 1 tablet (0.1 gm) atebine is effective, even as a clinical prophylactic agent ; but it cannot be used habitually for this purpose because even in this small dose it rapidly causes a yellow coloration of the skin.

*Treatment of the attack.* — The Commission considers that it is not wise to treat an attack of malaria by more than one specific remedy at a time during the acute stage, and expressly emphasizes the opinion that plasmoquine should not be used for the treatment of any form of malaria. Therefore quinine or atebine must constitute the











specific remedy. However neither one nor the other entirely fulfils the requirements of a *therapia sterilisans magna*, and the Commission does not consider that for general use either of these products should be preferred to the other. The great advantage of possessing two remedial agents is that in cases which prove refractory to treatment by one, the other can be tried. In the treatment of acute attacks of tertian and quartan fever quinine and atebrine seem nearly equally effective, but in cases of subtertian malaria atebrine is clearly superior to quinine. It does not follow that quinine cannot give good results or that it should be always replaced by atebrine in the treatment of acute attacks of infection by *P. falciparum*. In this connection and in correlation with several other problems of therapeutics, the Commission lays emphasis on the fact that observations show that the treatment of malaria in all its forms is more a local and individual problem than has been realised hitherto. The Commission therefore suggests that the research workers of all countries should determine, as far as possible by carefully controlled experiments, the susceptibility of the various local strains of the parasite to quinine and atebrine.

The Commission considers that curative doses of quinine or atebrine should not be administered during more than seven consecutive days for the treatment of an attack, and that a five days' treatment will often suffice.

*Treatment for the prevention of relapse.* — There is not at present, it would appear, a remedy or a combination of remedies which is able to destroy all the parasites in the human host and thus to prevent any possibility of a relapse. Such a result cannot be guaranteed either by treatment with quinine or atebrine alone, or with either drug mixed with plasmoquine, with any intensity or duration of treatment. For this reason and for those indicated above the Commission does not consider that it is in the interest of persons suffering from the disease to endeavour to combine a treatment for the prevention of relapse with a treatment for the cure of an acute attack. It is considered that preventive treatment against relapse should begin at earliest one week after the termination of the first attack.

The Commission has also studied the question of whether the percentage of relapses can be reduced more effectively by using quinine mixed with plasmoquine than by using quinine alone. It is observed that as the mixture does not give rise to any new chemical combination in the stomach each drug exercises only its own specific action and that doses of plasmoquine administered thus with quinine are inferior in action to those which produce a specific effect on the sporozoites and the trophozoites during the incubation period of the disease or on the merozoites and schizonts during the attack proper. This being the case, and as it is known that quinine does not prevent relapses, the suggestion that it is possible to reduce the number of relapses by administering ineffective doses of the two drugs mixed, is clearly paradoxical. Studies are also reported which indicate that the percentage of relapses may be reduced by the addition to quinine of non specific medicaments such as bicarbonate of soda; according to other writers the proportion of relapses following treatment by plasmoquine plus quinine reached 100 %. It is mentioned in this connection that the percentages of relapses following any specific treatment (and even that of relapses not preceded by any specific treatment) varies greatly in different countries and in different regions of the same country and from one individual to another, and this statement is accompanied by a short description of certain of the factors to which this variation may be attributed. The problem is therefore one which cannot be easily solved by means of clinical experiments in the field, that is to say in conditions including a number of unknown factors.

For these reasons and in view of the cost of the various systems of treatment, the Commission does not at present recommend the adoption of a method of treatment based

on the use of quinine accompanied by plasmoquine (« Quinoplasmoquine », « compound plasmoquine », etc.) for reducing the frequency of relapses. But, in view of the opinions held with regard to artificial induction of the disease, the Commission would be willing to reconsider the question if laboratory experiments on birds or monkeys, confirmed by clinical experiments on artificially induced malaria in man in known conditions, should prove that the addition to quinine of a non-effective dose of plasmoquine really enhances the action of the quinine.

The method that the Commission recommends to prevent recurrence of subtertian fever differs from that proposed for tertian and quartan fever. The reason is that there is more chance of completely ridding the organism of all the parasites in the case of subtertian malaria than in infection by the other malaria parasites. The Commission recommends that in the case of subtertian fever (*P. falciparum*), when treatment of the first attack has not resulted in a permanent cure, the treatment should be repeated at the first reappearance of the disease.

*Prevention of the spread of malaria* (Treatment directed against the gametocytes).

— As quinine and atebrine both destroy the gametocytes in tertian and quartan fevers, difficulty begins only with the gametocytes of subtertian fever (crescent bodies), on which these drugs have only a weak action. Plasmoquine has however a very effective action. Doses intended to prevent infection of mosquitoes by the carriers of crescent bodies should be administered twice a week during the period in which the blood contains crescent bodies. The Commission considers that both in the laboratory and in the field experiments should however be carried out with doses of 0.02 to 0.04 gm. in order to determine the minimum effective and non-toxic dose.

The Commission finally reminds readers that in 1927 it recommended malarial countries to restrict their activities, except in the case of colonies situated in special conditions, and to base their medical and sanitary services on the principle that in the control of malaria it is better to aim at attenuating the virulence of the disease and reducing mortality, rather than to adopt the more radical measures that are necessary for the complete elimination of the parasite in a given region.

G. R.

## Forestry.

FORESTRY PROBLEMS IN GREAT BRITAIN. — Professor TROUP, in a lecture given to the British Science Guild at its annual meeting last June, discussed the important question of Forestry in Great Britain, with special reference to the State afforestation scheme now being carried out by the Forestry Commission, from the point of view of its progress and of certain of its technical and scientific problems.

He explained that the afforestation of extensive areas of bare land, with tree species frequently exotic in character, raises a variety of highly complicated questions. These are treated by a special research branch of the Commission with the assistance of certain University Departments and more particularly by the Oxford Imperial Forestry Institute. These problems include those relating to soil conditions such as are to be found, for example, on the waste heath lands which represent so considerable a part of the area available for forestry purposes. Here the soil tends to deteriorate in consequence of the leaching out of the nutrient elements in a climate where precipitation is in excess of evaporation, making it often a difficult matter to establish tree-growth. In such cases — on the experimental scale at any rate — deep ploughing has been found to be advantageous. On peat soils excellent results have been obtained by draining and planting on square sods dug out of the drain channels and inverted and placed

on the surface of the soil. This method has the effect of oxidising and breaking down the turf, and thereby setting free nitrogen and other essential nutrients. Experiments with basic slag have also given excellent results on peat soils that seemed very unfavourable for afforestation work.

Good progress has so far been made with the State scheme but, in Professor TROUP's opinion, the programme requires further consideration, being formulated during the war and therefore in the first place based on questions of national safety. During the years that followed the war other important questions came to the front, such as the prospect of a shortage in world timber supplies and the question of unemployment. The whole question of the forest policy of Great Britain now calls for re-examination on broader lines. Private forestry is by no means in a satisfactory condition, a large part of the private woodlands being to a greater or less degree unproductive and management on scientific lines the exception rather than the rule. Up to a certain point this state of things may be due to the fact that most forest holdings in Great Britain are too small in themselves to form satisfactory economic units, and a possible remedy may be found in co-operative management of groups of estates by expert forest-organisers. Professor TROUP is also of opinion that, as in the case of certain European countries, it may become necessary to make the adoption of proper management schemes and the re-afforesting of cut-over areas on private estates compulsory on their owners. (Based on an article in *Nature*, London 1933, vol. 131, No. 3321, p. 900).

R. W.

**AFFORESTATION ON PEAT OR BOG LAND IN GREAT BRITAIN.** — The methods of mound or turf planting described below, so extensively used by the Forestry Commission in Great Britain, have now passed the experimental stage. By their adoption, according to Mr. G. B. RYLE, writing in the *Quarterly Journal of Forestry* (London 1933, No. 2), successful spruce crops can be established without a prolonged period of stagnation or « check » and at a reasonable cost.

The necessity for a thorough aeration of the root system has been abundantly proved and this system of turf planting gives such aeration from the outset. In addition, as the plant is raised a little above the ground level, it is less liable to damage by ground frost and weed growth. It should be made perfectly clear that turf planting cannot in any way take the place of proper drainage and that it is quite essential to carry out effective drainage of the soil before actual plantation work is begun.

Typically the lay-out of the turfs for planting is made by cutting a series of parallel ditches, from each of which two to four turfs are taken and placed at a distance of about 5 or 5 ½ feet apart. The turfs should be 13-14 inches square, which allows a spacing of 5 ½ feet between each and of 28 ½ feet between each « turf drain ». This spacing is quite satisfactory for Sitka spruce in sheltered places, but for Norway spruce or on exposed sites, a rather closer spacing may be required.

In thickness the turfs should generally not exceed 5 inches, though it may be found that the conditions of the soil require turfs 6-8 inches thick, in which case sufficient time must be allowed for them to become properly weathered.

The turfs cut from the drains are placed upside down at the spacing selected for the future plantation and left for at least a month but preferably for a considerably longer period. This treatment allows for adequate weathering and firm settlement into position and also for the partial rotting of the « sandwiched » vegetation, thus providing suitable rooting conditions for the plants.

Turf planting with spruces can be done at any period during the normal planting season, though in order to avoid frost damage experience has shown the late spring-

time to be the best. Experiments made during every month of the year have shown that, if the plants are near to the place of permanent planting, the actual season of planting has little effect on subsequent growth, and that they can be planted with good chance of success at any moist season.

The planting process should be carried out with a sharp spade or mattock, making a single slit in the turf from the middle of one side into the centre of the turf. The turf is then tilted and the plant inserted into the slit, the roots being spread out beneath; the turf is then replaced and lightly brought together by foot pressure so as to close the slit. Here the advantage of using thin turfs becomes apparent, since it allows a large proportion of the roots to lie in the aerated layer of semi-rotted vegetation, whereas with thick turfs the greater part of the roots will be within the turf itself. In any case, the root system will be quite clear of the sour bog soil and the tree can well be put quite deep in the ground, the collar and part of the foliage being quite safe below the surface of the mound.

As regards the age of the plants, two-year seedlings are quite satisfactory in the more sheltered places. Two-year one-year transplants or, where herbage is rank, the smaller «seconds» of two-year two-year stock are the most suitable.

R. W.

CULTIVATION OF OSIERS FOR BASKET WORK, ETC. (1). — The basket making and allied industries have shown considerable development during recent years and therefore Eyvind WILSE writing in *Skogeieren* (Oslo 1933, No. 6) recommends owners of forest and agricultural land in Norway to pay special attention to osier growing. This form of cultivation has also the special advantage that it is generally possible to utilise for the purpose soils which, either by their nature or situation, are unsuitable for the ordinary purposes of forestry or agriculture, but by this means can be made to give a steady and continuous yield.

The type of land best adapted for osier-growing is low lying, rich and with abundant humus, situated on the banks of lakes or water-courses and generally flooded in spring and autumn, though pools of stagnant water are to be avoided.

For the heavier forms of basket work, the writer recommends *Salix viminalis* and for the lighter types, *Salix purpurea*.

Deep and careful ploughing and subsequent manuring are required, when it is desired to establish an osier plantation and, later, manuring should be repeated at intervals of 3-4 years.

The original planting should be made with cuttings 12-18 inches long, taken from shoots 1-2 years old, springing from mature osiers. They should be cut in good time before foliation, i. e., in March in the case of Norway. The small heads of the shoots should not be used but the cutting should be made so as to leave a bud about 4-5 inches below the upper cut and about the same distance above the lower. The surface of the cuttings should be smooth and slanting, and they can be kept in snow, cold water or soil in a cool place.

Planting should be carried out before foliation and, if the special object is to make hoops, the rows should be about 2 ft. 4 in. apart and the slips about 1 ft. 8 in. When however the plantation is made with a view to lighter work the distances should be 1 ft. 8 in. and 1 ft. 2 in. respectively. The slip should be planted vertically so as to facilitate root development and only about 3 inches should show above ground.

(1) In connection with osier-growing, see also *Monthly Bulletin of Science and Practice* 1930, No. 9.



The cuttings should be left undisturbed for two years except for careful weeding and breaking up of the soil between them. They should then be pruned when the sap rises, so as to leave only about 3 inches above the surface of the soil.

The osiers for trade use are gathered annually or every other year according to the dimensions required. All shoots should be cut away and no stragglers left to weaken future growths.

If it is desired to grow osiers for hoops, the three or four strongest shoots should be left and when they have reached the required length, i. e., about 7 ft. 4 in., they should be cut, but not before October.

In order to speed up growth, the writer recommends the use of artificial fertilisers ; during the first year 80 kg. of nitrate of lime should be used per hectare and later 600 kg. of basic slag and 200 kg. of Kainite.

R. W.

## BOOK NOTICES \*

### Soil Fertilization.

*Untersuchungen über das Kalkbedürfnis der Böden durch Laboratoriumsmethoden und Düngungsversuche*, zusammengestellt und herausgegeben von Prof. Dr. O. LEMMERMAN, in Verbindung mit Dr. L. FRESENIUS. (Research on the lime requirements of soils by laboratory methods and fertilizers tests, collected and published by Prof. O. LEMMERMAN in collaboration with Dr. L. FRESENIUS) 2. Beiheft zur *Zeitschrift für Pflanzenernährung Düngung und Bodenkunde* (second supplement to the periodical cited), 463 p. mit zahlreichen Tabellen. Verlag Chemie, Berlin 1933.

Since the reaction and lime content of the soil have been recognised as having an important bearing on fertility, a series of methods have been elaborated for the determination of soil lime requirements. But it has been realised that though the methods proposed may determine with approximate accuracy the reaction and lime requirement of a given soil, there remains the question as to what extent they allow of estimating the amount of lime to apply to the soil.

It is found that not only do the various methods indicate very varying quantities but that one and the same method may give very dissimilar results according to the manner in which it is applied.

In view of the great importance of this question for the farmer it was desirable to establish, by a systematic study of the greatest possible number of soils, which methods indicate best the quantities of lime or chalk to apply. For this purpose there was formed in Germany on the suggestion of Prof. O. LEMMERMAN an « Arbeitsgemeinschaft » (association for work) for the purpose of studying on a uniform plan by laboratory research and fertiliser tests the value of the various methods. No less than 16 scientific agricultural institutes forming the Association have studied in this regard a number of soils (60 in all) by 9 different laboratory methods and have carried out conjointly fertiliser tests in pots and in the field during three consecutive years.

Prof. LEMMERMAN undertook the direction of the work and the publication of the results with the help of Dr. FRESENIUS. The results form the subject of the present volume, of 463 pages (with numerous numerical tables), which includes first a list of the members of the Association and an account of the uniform plan of work followed, then gives the reports (for three years) of the sixteen Institutes, which are

\* Under this heading are included short synopses of books received for review.

full of data of interest both to scientists and practical farmers. The volume ends with a discussion of the conclusions that may be drawn from a comparison of the various reports.

### Animal Husbandry.

F. LIÉGEAIS (Professor at the State School of Veterinary Medicine at Cureghem-Bruxelles), *Traité de pathologie médicale des animaux domestiques*, I vol. grand in-8°, 725 p. J. Duculot, éditeur, Gembloux, Belgique; Librairie agricole de la Maison Rustique, Paris 1933.

The progress achieved in recent years in the domain of internal medicine is such that it must necessarily be reflected in the modern teaching of medical pathology and the aspect of the latter must be profoundly modified. The emphasis laid on this new aspect is not one of the least of the merits of the work of Prof. LIÉGEAIS. He has adopted a method which will simplify the task of the veterinary surgeon.

The various chapters contain a description not only of the classic diseases but also of certain affections only recently diagnosed; in order to adapt better the study of medical pathology to the requirements of clinical treatment, space has been reserved also for the functional troubles and more particularly those of the nerves, including those of the vegetative vascular system.

Special attention has been given to the study of pathogenical organisms, in the study of which will be found, in addition to a critical account of the old theories, a description of modern conceptions in the domain of the chemistry and physical chemistry of the body fluids.

For all these reasons this work will be of value as much to the student as to the practical veterinary worker.

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COMMISSION INTERNATIONALE D'AGRICULTURE. PARIS. Annales. Août 1933-X. [Chaumont, Imprimerie de l'Est], 1933. 226 p.

INTERNATIONAL DIRECTORY OF AGRICULTURAL AND HOME ECONOMICS LEADERS. Vocational teachers. Fifteenth edition. Cambridge, Mass., Wilson, 1933. 1284 p.

SOUTH-EASTERN AGRICULTURAL COLLEGE. WYE, KENT. The Journal, v. 32. London, Headley Brothers, 1933. 236 p.

#### *Soil Science.*

ASSOCIATION INTERNATIONALE DE LA SCIENCE DU SOL. Comptes rendus de la sixième Commission rédigés par Otto Fauser. Volume B, 1933. Groningen [Hoitsema], 1933, 415 p.

ISTITUTO VITTORIO EMANUELE III PER IL BONIFICAMENTO DELLA SICILIA. PALERMO. Prima campagna di esplorazioni geoidrologiche in Sicilia. Palermo, Montaina, 1933. 33 p. (Studi, monografie, rapporti, n. 1).

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*Plant Protection.*

CONTROLLING PLANT PESTS IN SOUTHERN AFRICA: a handbook for the fruitgrower, orchardist, gardener and grower of field crops. Johannesburg, Cooper, 1932. 199 p.

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LÜSTNER, G. Krankheiten und Feinde der Zierpflanzen im Garten, Park und Gewächshaus. Stuttgart, Ulmer, [1933]. xvi, 266 p.

*General Agronomy and Crops of Temperate Regions.*

JAHRBUCH ÜBER NEUERE ERFAHRUNGEN AUF DEM GEBIETE DER WEIDEWIRTSCHAFT UND DES FUTTERBAUES. Hrsg. von Dr. Friedrich Falke und Dr. Richard Geith. 11. Jahrgang. Hannover, Schaper, 1933. 207 p.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

### EDITORIAL

#### **An important problem of rural hygiene.**

The attention of the farming world may well be called at the present time to the processes for treatment of manure calculated to prevent the hatching out of flies.

In towns the fly tends to disappear in proportion as the system of "everything to the drains" prevails, together with modern methods of collection, transformation or destruction of household refuse. It would seem also that flies are being chased away from avenues, squares and streets by the vehicular traffic itself, the petrol fumes from the cars and factory smoke, etc. Within the dwelling houses, it has become easier to keep down the flies, thanks to the improvements introduced alike in building and in furniture, and to the general spread of cheap and effective means of control such as sprayings, fly papers, wire blinds, etc.

On the other hand farms offer the most favourable conditions for the multiplication of flies, since it is quite impracticable to hinder the laying of eggs on the droppings of farm animals while in the sheds, and still more impossible to control laying on the places used for preparation and storage of farm manure, too often planned with little attention to the most elementary hygienic precautions.

Must therefore all hope be abandoned of limiting in rural districts the permanent danger from this source of transport of germs of infectious disease and the risk of contamination of foodstuffs? A possibility of control by the simplest possible means is presented by the publication of the first results of investigations carried out on the proposal of the Danish Ministry of Agriculture, under the direction of Prof. M. THOMSEN.

An improvement in the situation can be obtained only by means of the destruction of fly larvae and eggs. It is generally believed that the house fly has a special predilection for horse manure. The observations of Prof. THOMSEN lead to the interesting conclusion that pig and fowl dung form the chosen breeding places of the insect. On the contrary, fly larvae are not found in cattle dung. If the three kinds, viz., cow, horse and pig dung be placed side by side – an experiment within the power of any farmer to make – it will be observed that it is always on the last that the flies will lay eggs.

An adult fly has on an average three weeks of existence. If a crate of 50 kilogrammes of fresh pig dung be left uncovered for 24 hours and then covered with

wire netting, it is possible to observe the actual hatching out of 50,000 flies per kilogramme of the material.

The processes of destruction of larvae by heat, whether sprinkling with water heated to 80°, or utilisation of the heat of fermentation of the manure heap, have been proved ineffective. The method which has given the best results is extremely simple; it consists in covering the fresh pig or horse manure with a layer of cow dung. If that is not to hand, then the fresh pig manure can be covered with a layer of manure at least 8 or 9 days old.

The interest of such ascertained facts is considerable from the hygienic point of view. It may well be remarked in this connection that the most ordinary observations made on farms, when they are accurately and intelligently interpreted, may have important practical consequences.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

### Papaya and Papain.

General Information. — The papaya is one of the most widely diffused fruit-trees in tropical regions. Its delicious fruit is much appreciated in all parts and, as it can be grown without difficulty, there is always an abundance of this fruit on the market. It is, however, very soft and therefore not suitable for exportation. The special characteristic which has drawn the attention of planters in various parts of the tropics to the scientific cultivation of the papaya is the papain contained in the whitish latex of the stems, leaves and rind, an enzyme by means of which albuminoids may be dissolved and digested, so that it serves the same purpose as pepsin.

The extent to which papain has increased in importance during the last few years is shown in Table I.

TABLE I. — *Exportation of papain from Ceylon from 1930 to 1932.*

Destination	1930		1931		1932	
	Quantity in lbs.	Value in rupees	Quantity in lbs.	Value in rupees	Quantity in lbs.	Value in rupees
United Kingdom . . . . .	12 927	76 149	14 596	71 881	16 022	83 227
Belgium . . . . .	—	—	—	—	680	—
Indo-China . . . . .	—	—	—	—	12	60
France . . . . .	4 141	23 715	2 056	10 482	1 555	7 975
Germany . . . . .	867	5 755	415	1 772	512	2 760
United States . . . . .	61 403	353 253	59 880	327 285	45 575	239 705
<i>Totals . . .</i>	79 338	458 872	76 947	411 420	64 356	338 247

Table II shows the quantities imported into the United States, one of the most important of the importing countries :

TABLE II. — *Importation of papaw juice or crude papain to the United States during the years 1931 and 1932.*

	Exporting Countries						Totals	
	Ceylon		United Kingdom		Belgium			
	1931	1932	1931	1932	1931	1932	1931	1931
Quantities in lbs. . .	51 165	40 145	14 092	13 652	—	694	65 257	54 491
Value in dollars . .	103 217	37 230	18 264	12 663	—	672	121 481	50 565

It will be seen from the above Table that 80 % of the papain imported into the United States comes from Ceylon.

The uses to which papain may be put are described later ; but it may be stated here that little is known of the trade channels followed by the powders imported into the different countries. For this reason no information can be given as to the requirements of the various markets and it would be inadvisable to encourage the cultivation of the papaya tree and the extension of the papain industry, although, in certain tropical regions, it might attain some degree of importance. Under present conditions, planters could be advised to take up papaya growing only if they were assured of a market for their products. As it is not unlikely, however, that this enzyme may come into more general use, some information on the subject may be of interest.

Investigations regarding the papaya and papain are not numerous. This *Bulletin* No. 3 of the year 1933, (p. 135-136) contains a notice of an article by the Principal of the Harcourt Butler Technological Institute at Cawnpore. As the information given by this writer does not altogether coincide with that collected in other countries, it may be useful to summarise two recent publications, one on Hawaii, by W. T. POPE, and the other on the Dutch Indies, by H. W. HORSTEDDE. Complete bibliographies are appended to these two brochures, and any reader specially interested in the subject will do well to refer to them. We limit ourselves here to a short summary of certain essential points which may be of interest to planters desiring to cultivate papayas for the purpose of obtaining papain.

Origin of the papaya. — The *Carica Papayer* is a native of Central America, probably Mexico. It is a very curious fact that this tree is no longer found in a wild state in that country. SOLMS-LAUBACH suggests that the cultivated plant is a product of a cross between different wild species. The papaya was introduced into the Far East at a very early period, the first references to it in India dating from the beginning of the 17th century. It is almost certain that the papaya was known in the Island of Hawaii prior to 1778, when the island was discovered by the English, and that the other Pacific

Islands have also known it for a considerable time, as is testified by the Polynesian names.

**Classification.** — The papaya belongs to the small tropical group of the Caricaceae. Among the 21 species of the genus *Carica* are some well worth studying with a view to experimenting in hybridisation, or as rootstocks for grafting, as, for example, *C. Candamarcensis*, *C. quercifolia*, *C. erythrocarpa*, the last-named of which bears fruit with red pulp.

**Distribution of the sexes.** — In the majority of descriptions the papaya is spoken of as being dioecious, but this is not always the case. Some of the numerous varieties are clearly monoecious. Moreover, with regard to the male specimens of the dioecious varieties it is nearly always observed that the rudimentary pistil of certain flowers is capable of developing and setting fruit, the seeds of which can mature and even germinate. Mention could be made of many other possibilities of division of the sexes, such as that where the male flowers, which are generally bunched in ramified inflorescences, are inserted on the short peduncles in the axles of the leaves, thus resembling the female flowers. Such a flower cannot, apparently, produce fertile pollen. Seeing that none of these varieties is of practical importance it is not necessary to give further details regarding them. The only question of interest for growers is the possibility of being able to determine in advance the sex of the young plants or, which would be even more desirable, of the seeds. V. T. POPE has ascertained that the position of seeds in the fruits has no influence on the sex of the future plants. Other scientists have discovered that it is not possible to base any prediction as to the sex on the vigour of the young plants' growth. There are always, however, certain people who consider themselves prophets, but a careful examination of the evidence they bring forward shows that it is worthless. There remains, therefore, only one method of doing away with the possibility of rearing too many useless male trees, namely, to put several plants in each hole when planting. J. D. J. HOFMEYER, who has studied this question in South Africa, advocates four plants per hole.

Mention should also be made of certain cases of parthenocarpy which are met with when pollination has been prevented. Generally speaking, seedless fruit does not mature, and, when it does, has very little flavour.

**Cultivated varieties.** — Papayas vary considerably in appearance, but it is observed that the habits of the trees, as well as the shape, colour and aroma of the fruit, are much influenced by the conditions under which they are grown, as, for example, sun, temperature, humidity, aspect, etc. There are also certain hereditary characteristics. Seeing that experiments under the direction of geneticists have not yet been made on a large scale, it is impossible to say whether the aberrant forms which appear from time to time among the descendants of papayas are mutations or whether they are hybrids of the  $F_2$  or a later generation.

In any case, it may be mentioned that POPE has very definitely distinguished two among the numerous Hawaiian varieties namely, a dioecious variety with round, and a monoecious variety with oblong fruits. The papaya « Solo »,



the best that is known at Hawaii, belongs to the former variety. As cross-fertilisation is not easily avoided, and there must always be undesirable types among the descendants of trees which are not isolated, it is advisable to establish small and entirely isolated plantations of superior trees, for the sole purpose of seed production.

**Establishment of a plantation.** — Papayas are generally reproduced by seed. Those obtained from well-matured fruits may be preserved for many years provided they are well washed, dried and placed in air-tight containers. Fresh seeds germinate in from 10 to 50 days; preserved seeds, in from 30 to 50 days. From experiments made by MOCADA (see HOFSTEDT) germination depends upon the degree of exposure to light, that is, the percentage of seeds which germinate in darkness is nil, and it is also nil if the seeds are exposed to the sun throughout an entire day. The best results are obtained if the seeds are exposed to the sun from 7 to 11.30 a. m. and the nursery-beds shaded during the afternoon.

The seeds are sown in shallow trays or in the ground and carefully covered with a thin layer of sand. The plants should be transplanted at the end of three or four weeks. If they cannot be used immediately a second transplantation may be made. Another method of planting consists in placing from 4 to 6 seeds in a bamboo basket which, after germination has taken place, can be put in the final position in the orchard. It is advisable to cut off about  $\frac{3}{4}$  of the leaves before each transplantation, in order to avoid excessive transpiration. It appears that even plants which have attained a height of 2 m. may still be transplanted. It is possible, therefore, to replace male by female trees, even at an advanced age.

Many attempts have been made to propagate papayas by vegetative methods, either by means of cuttings or by grafting. It is highly desirable that a satisfactory method of vegetative propagation should be found, seeing that there can be no certainty of obtaining uniform seeds of a second generation which will develop in every respect like the mother tree, and also the undue proportion of male trees is a disadvantage. On various occasions successful attempts have been made to take slips from, and to graft, papayas, using for grafting the branches of old trees. The technique is carefully described by POPE. There is, however, a great disadvantage in these methods, namely, the lack of vigour in slips and grafted plants. The slips never develop strong roots and the grafted plants are slow growing and yield very little fruit. The writer, who has devoted many years to the study of these problems, has therefore reached the conclusion that, at present, neither of these methods has any practical value.

Opinions as to spacing the trees are not unanimous. WESTER advises spacing  $4 \times 4$  m.; DE SILVA,  $5 \times 7.5$  m., but the latter assumes that there will be interplanted crops. The Principal of the Harcourt Butler Technological Institute at Cawnpore is in favour of a distance of 7 ft. in every direction.

The majority of writers recommend the use of fertilisers and give some information as to their composition. The formula given below is by SANYAL,

other writers having adopted it without making the experiments themselves. It gives the quantities of the fertilisers to be applied per acre.

- 800 lbs superphosphate.
- 315 lbs. sulphate of potash (strong solution).
- 250 lbs. nitrate of soda.
- 190 lbs. sulphate of ammonia.
- 445 lbs. black volcanic sand.

HOFSTEDE is justified in charging the majority of writers with failing to make careful research in order to determine for each separate region the requirements of the papaya in respect of fertilisers. Since the appearance of HOFSTEDE's work, H. D. SEN has published the results of an experiment made with the object of comparing the influence of the different types of nitrogenous fertilisers on the growth of papayas and the papain content of the fruits. He has also studied the phenomena arising from potash and phosphorus deficiency. Among the organic fertilisers used in British India, castor oil cakes and faecal matter give the best results. Then come "Neem" oil-cakes (*Margosa* sp.) and cow dung. A harmful effect is produced by "Mahua" oil-cakes (*Bassia latifolia*), but this dies out after a certain time. The lack of potash seriously affects the papaya, but the results produced by lack of phosphorus are not equally clear.

In regions where there are periods of drought, the plantations should be irrigated during rainless seasons.

Some authorities are in favour of topping the trees, but it is not certain that the yield is increased thereby, the earlier experiments made by I. B. KULKARNI not having given very clear results on this point. The only advantage of this operation is that the topped trees facilitate the exudation of latex and the gathering of the fruit.

There are certain advantages in intercalary crops. In British India tomatoes are chosen, but there are many other possibilities.

Opinions differ as to the age that a papaya plantation may attain. HOFSTEDE speaks of from 5 to 10 years of productivity, but he adds that the yields of papain are most abundant during the first years. It is advisable to replace the trees periodically so that the productive period of each tree never exceeds five years.

Diseases and pests. — The diseases and pests by which papayas are attacked are not numerous and play no important part. HOFSTEDE gives a tolerably complete list of them. Papayas, however, suffer greatly from an excessively damp soil. The roots soon decay and the trees die shortly afterwards.

Papain and its harvest. — The characteristic properties of papaya latex were known as early as the 18th century. In 1750 GRIFFITH HUGHES wrote as follows, in his account of Barbados: «The latex of papayas is of so penetrating a nature that the toughest salt meat becomes tender, when cooked with an unripe papaya fruit in its skin». In 1879 TH. PECKHOLT obtained from the crude latex, concentrated for the first time, an active and more or less pure preparation. The scientific treatment of papain has been

studied in the Dutch Indies since 1888. M. GRESHOFF, at that time principal of the chemical and pharmaceutical laboratory of the Buitenzorg Botanical Gardens, at first sent unripe papaya fruits, preserved in alcohol, to F. WITTE's chemical factory at Rostock, where all attempts to prepare an enzyme from them were unsuccessful. This will be readily understood, seeing that alcohol injures the latex by depriving it of its water content.

In 1889, G. KARSTEN sent to the same factory latex obtained on the spot and preserved by the addition of 2 % chloroform. By this means a preparation far superior to the trade quality was obtained. Subsequently, further consignments of latex preserved by chloroform arrived in an unsatisfactory condition. Chloroform however, is a good preservative but it is necessary, according to HOFSTEDE, to add it to the latex immediately after exudation from the fruit.

Papain, as has been said, is contained in the latex of the papaya. There is good reason for using the expression « latex » for this liquid ; from the botanical point of view, it is the only accurate term. The English and French writers who speak of « juice » or « suc » are incorrect, since by « suc » is understood the liquid obtained by pressing the pulp of the fruit.

The latex tubes are found in all parts of the plant and the latex exudes whenever an incision is made ; they are however most numerous in the outer skin of the fruits. W. BOBILIOFF has succeeded in separating these tubes from the surrounding tissues, and has made a study of the process of the flow of latex from the tubes thus isolated. He has been able to distinguish two periods. During the first the latex alone exudes and the protoplasmic lining of the walls of the tubes is not involved in the flow. During the second period a granulated liquid is also observed to exude which probably contains protoplasm. The gash then quickly closes probably as the result of a gelatinising ferment contained in the protoplasm. Subsequently HOFSTEDE observed that the first flow of latex from the freshly made incisions coagulates only very slowly, often only after some hours. If however small quantities of gelatinised latex are added to the fresh latex, gelatinisation begins at once.

HOFSTEDE and SEN have carried out very interesting experiments with the view to discovering the best methods of tapping the fruits. The earlier writers in describing the tapping or lancing stated that the incisions must be made with horn or ebonite knives and that the use of steel knives must especially be avoided as it tended to cause discoloration of the latex. These statements have been constantly repeated. HOFSTEDE is the first who has investigated the question rather more closely. At first he made use of bamboo blades, which however had the disadvantage of never being sufficiently sharp edged and in consequence of bruising the cells containing chlorophyll ; the latex then takes on first a greenish and then a greyish colour. For this reason, the author tried steel knives and never observed any discoloration of the latex. The digestive effects of papain samples have been compared as between those coming from incisions made by bamboo knives and those from incisions made with steel knives, and no difference could be observed. Preference should accordingly be given to steel knives, as the edge is more cutting and greater quantities of latex can thus be obtained. Pieces of broken glass can very well be

used at almost no cost. The latex can be collected in jars of aluminium, glass- or porcelain. It would seem that the least deterioration takes place in glass; but the difference in digestive capacity of the papain obtained from the different samples is slight, and as there are many advantages attached to aluminium, this forms its recommendation.

H. S. SEN carried out his experiments without any knowledge of the work done by HOFSTEDE which had appeared previously. The first measured the quantities of papain obtained by consecutive incisions on the same fruit. The best result was always that given by the first incision; and moreover the papain coming from the first incision had the greatest proteolytic activity.

According to the particulars previously recorded (see this *Bulletin*, 1933, No. 3, p. 135) it appears that not more than four incisions should be made at a time on each fruit. Young fruits give small yields. The yields increase with the age of the fruit, attaining a maximum in fruits about three months old which have finished growing. The proteolytic activity also increases with age.

SEN later studied the influence exercised by the soil and by the variety of the plant on the yields in papain. Yields were determined in the case of two trees of the Cawnpore variety, one of which was grown in the shade in a rich soil, and the other in sunshine in a poor soil. The former tree bore 148 fruits and gave a yield of 428 gm. of papain, for the second the figures were 86 fruits and 96.1 gm. of papain. Out of the three varieties tested, viz, the Cawnpore, Bombay and Calcutta varieties, the second gave the best yields, as the following figures that relate to 100 fruits show: those of the Bombay variety yielded 158 gm. of papain, those of the Cawnpore variety, 126.6 gm.; those of the Calcutta variety, 55.4 gm. only. In addition the number of fruits per crop is much higher for the Bombay variety than for the two others. It was shown that a tree of the Bombay variety yields one half lb. or 226 grammes of papain per annum; a tree of the Cawnpore variety yields half that quantity and a tree of the Calcutta variety only one third.

HOFSTEDE has endeavoured to determine the best method of tapping and with this object has compared the two following methods:

(1) complete lancing of the fruits at one time, making a longitudinal incision with numerous lateral canals, parallel to each other, spaced at one cm. apart and covering the whole circumference of the fruit;

(2) two longitudinal incisions, spaced at one cm. and starting from the base of the fruit; after 2 days, two new incisions in the same direction and parallel to the first, and so on; the lancing is effected on the first, the fourth, seventh and tenth day, till the whole surface of the fruit has been lanced.

In a number of experiments, the second method has given much more favourable yields than the first, viz., 1.27 gm. of papain per fruit with the former method and 4.42 gm. with the second, comparing fruits of the same age.

The writer next compared longitudinal incisions with circular ones, making the cuts every three days in either case, but found no differences in yield. Finally he compared the two following methods:—

- (a) two longitudinal incisions every three days;
- (b) six longitudinal incisions every ten days.

Method (b) gives very uncertain results: it may in fact happen that the fruits will cease to yield latex at the second incision; with method (a) 12 fruits yielded 34.11 gm. of papain; with method (b) 12 other fruits of the same age yielded only 24.24 gm.

It follows that two incisions, made every three days, give a maximum yield. This result agrees with that obtained by SEN, referred to above.

HOFSTEDE has also determined the yield in papain by comparing fruits of different ages. Fruits from 100 to 130 days gave the best yields.

All these experiments go to show that the fruits should be tapped when at the age of 100 days and that two incisions should be made, returning every three days to the same fruit.

Preparation of papain. — The most primitive process consists in spreading the latex on dishes and drying it in the sun. It is evident that the product so prepared will not have a satisfactory appearance; papain thus dried is brown or even blackish and flour is added in the attempt to render it more attractive. HOFSTEDE speaks several times of the adulteration of papain which was formerly practised, especially in Ceylon.

Drying in furnaces as described in POPE's handbook, or in the sun driers described by the Principal of the Harcourt Butler Technological Institute, un-

TABLE III. — *Determinations of the proteolytic activity in different samples of papain.*

Samples	Loss of weight at 120° C  %	Remainder after incineration  %	Proteolytic activity measured on fibrin at 4° C, the reaction of three media being resp.			Proteolytic activity measured on albumen of blood serum at 45° C  pH = 3.7
			pH = 2.5	pH = 6.7	pH = 11.3	
			(1)	(2)	(3)	(4)
Prepared at Java, dried in 2 hours in the 3 mm. vacuum at 40° C..	8.50	7.08	4.8	1.8	12.6	41.2
Ceylon product: seeds coloured yellowish-brown . . . . .	11.09	9.80	3.0	0.4	very slight	19.1
Java product: sample of 700 gm. taken from trees of different varieties . . . . .	9.28	6.16	5.1	1.4	14.6	22.8

(1) Number of grammes of pepsin  $\times 1000$ , for which, in the same conditions, the proteolytic activity corresponds to that of 1 gm of papain.

(2) An arbitrary unit is taken indicating the intensity with which the proteolysing liquid gives the same colouring as is given by a solution of 5 mg. of indocarmine in one litre of water.

(3) Number of grammes of pepsin  $\times 1000$  for which the proteolytic activity in a pH medium = 2.5 corresponds to that of one gm of papain in a pH medium = 11.3.

(4) Number of mg of hydrocyanic nitrogen per gramme of albuminous nitrogen.

doubtedly marks progress. But the ideal preparation is not obtained by these means, and HORSTEDÉ has shown in numerous experiments that drying *in vacuo* is the only method that makes it possible to obtain a product white in colour and with a proteolytic activity remaining intact even in alkaline media. For this reason in particular would-be planters of papaya and manufacturers of papain are recommended to consult HORSTEDÉ's work.

HORSTEDÉ began his trials with vacuum apparatus by first applying temperatures of from 37° to 40° C. but, against the view generally held, he also tried higher temperatures, rising to 50° or 60° C. Samples from all these trials were sent to the Netherlands where Prof. RINGER determined their proteolytic activity. The results of these determinations are shown in Tables III and IV. It should be noted that only data appearing in the same table are comparable, as the fibrin and albumen of blood serum are substances highly liable to deterioration and must be prepared afresh for each series of experiments.

TABLE IV. — *Determinations of the proteolytic activity of different samples of papain.*

Samples	Loss of weight at 120° C %	Remainder after incineration %	Proteolytic activity measured on fibrin at 40° C.			Proteolytic activity measured on the albumen of blood serum at 45° C pH = 3.7
			pH = 2.5	pH = 7.1	pH = 11.3	
Java papain dried <i>in vacuo</i> :						
10 mm at 40° C. . . . .	13.20	0.06	2.8	0.2	1.7	22.45
10 mm at 50° C. . . . .	9.38	7.29	2.2	0.5	3.9	30.32
10 mm at 60° C. . . . .	8.36	7.97	4.5	1.0	4.6	35.24
Papain from South Africa, probably air-dried . . . . .	19.84	6.92	0.0	0.0	0.0	3.42

It is clear that papain vacuum-dried is a superior product to that dried in the sun or in ordinary ovens. Drying in a vacuum has one small drawback which was not anticipated by the author: the disagreeable odour of the sulphuretted hydrogen gas which is given off by the samples after 24 hours. Several samples were analysed by the author to discover the cause of this, and he found that papain contains about 3 per cent. of sulphur. This is not however a serious drawback as the disagreeable odour passes off if the dried and pulverised product is kept for a certain time in a dry and well ventilated place.

Future planters who intend to prepare their own product are accordingly advised to procure the plant for vacuum drying. A German model is described by the author, containing five shelves of 5 X 10 cm. spaced 6 cm apart, by means of which about 2 kg. of dry papain can be dried, the whole process taking

two hours only. The apparatus cost 2000 florins and to this there must be added the cost of purchasing a dynamo for working the vacuum exhaust, amounting to about 500 florins; and further there must be added the costs of packing and transport of the apparatus and the motor plant including any customs charges, amounting to about 750 florins. This may seem a somewhat large outlay, but it guarantees the possibility of a regular supply of a product which in practice is certain to be appreciated by the purchasers.

The methods of papain purification are also described in the work of HOFSTEDE; they are however too costly to be applied on the plantations, and as the crude papain always finds purchasers, the necessity for the manufacture of papayotine (refined papain) has not been experienced in tropical countries.

**Yield.** — According to HOFSTEDE tapping may be begun on the fruits ten months after sowing. POPE gives the same period, 10 to 14 months, for Hawaii, and according to SEN about 13 months must be reckoned for Cawnpore. The different writers are in agreement that lucrative yields can only be expected over a period of about three years. It has not yet been ascertained whether it is better worth while to replant the orchards after that period, or merely to cut back the trees to a height of 0.5 or 1 m.

According to HOFSTEDE, the estimate of 50 fruits per tree per annum, which has formed the basis of a number of calculations, is too high. The different statements as to yield per tree or by acreage show little correspondence. HOFSTEDE quotes the figure of 365 gm of papain per annum and per tree given by HIGGINS and HOLT, but considers it too high. His own finding, for the best Java variety, the "Dapitan", is 330 gm of papain in two and a half years, making a periodical tapping of two longitudinal incisions. The figures given in the article of the Principal of the Harcourt Butler Technological Institute are still smaller. As these are taken from a two year old plantation, these are actual figures and not the result of calculation. The author gives as yield per tree: for the first tapping season, from 1 September 1929 to 31 August 1930, 75.1 gm of papain; for the second season, from 1 September 1930 to 31 August 1931, 54.3 g. The figures given by SEN, for individual trees during a single season, are very interesting: Bombay variety No. 13: 248.6 gm (214 fruits); var. Bombay No. 6: 119.8 gm (79 fruits); var. Calcutta No. 2: 40.8 gm (81 fruits); var. Cawnpore No. 17: 45.5 gm (36 fruits); var. Cawnpore No. 10: 156.9 gm (116 fruits). It is clear that the number of fruits per tree is the factor with most influence on the yield and it follows that the yield can be increased by selecting the trees among the varieties with highest production.

According to HOFSTEDE's calculations, the yield per hectare amounts to 186 kg in two and a half years if the trees are planted at distances of 4 m  $\times$  4 m apart, *i. e.*, 625 trees per hectare, including 10 per cent male plants; and to 300 kg. if the spacing employed is 3 m  $\times$  3 m, or 1000 plants per hectare. The Principal of the Harcourt Butler Technological Institute at Cawnpore gives for the second season's tapping a yield of 28.7 lbs. per acre (32.14 kg. per ha.), and for another orchard 11.9 lbs. per acre (12.33 kg. per hectare), figures much lower than HOFSTEDE's. On the balance sheet shown, this author appears to be more optimistic:

assuming 250 trees per acre (617 trees per hectare), he reckons for a production of 41.6 lbs. per acre, or 46.6 kg. per hectare.

**Financial Return.** — Balance sheets for papaya plantations have been published both by HOFSTEDE and by the Principal of the Technological Institute of Cawnpore. It is interesting to compare the figures given by the two writers who deal with very different areas, *viz*, the neighbourhood of Batavia (Java) and the region of Cawnpore (British India).

The price of papain on the New York market is taken as the basis of all calculations. HOFSTEDE shows that in 1927 Ceylon papain was sold at 15. 89 florins (Dutch) per kilo on the spot and that it was as much as 17.40 florins in New York. The Principal of the Cawnpore Technological Institute gives for 1932 a price of 12 rupees per lb. (24 florins per kilo). The F. WITTE firm, at Rostock, has been good enough to communicate the following figures of prices :

In 1925, about 10 shillings the lb.  
End of 1926, about 18 shillings the lb.  
» 1927, about 10 shillings 9 pence the lb.  
» 1928, about 16 shillings the lb.  
Beginning of 1930, about 7 shillings 6 pence the lb.  
End of 1931, about 10 shillings the lb.

This last price corresponds to 13. 33 florins per kg. The last number of the *American Oil, Paint and Drug Reporter* gives a price of 1.50 dollars to 1.60 dollars per lb. (6.23 to 7.69 florins per kg.). A fall in price is accordingly noted of late for papain, which thus constitutes no exception to the other world industrial and agricultural products. The following data will however go to show that the manufacture of papain may none the less remain of interest even with the low prices shown, provided that a market can be found where the product can be regularly sold.

HOFSTEDE has given estimates relating to an imaginary plantation of 13 hectares. On the assumption that such an undertaking may yield 2400 kg. of papain (which seems a generous estimate) and supposing that the factory possesses vacuum drying apparatus of improved type, HOFSTEDE arrives at a cost price of 5.63 florins per kg. With the selling prices of 1927 there was thus a fair margin of profit. The profits resulting from the sale of fruits or products of the intercalary crops are not shown on the balance sheet.

The estimates of the Cawnpore returns is of even more interest, since they are based on an actual example : a plantation of 2 acres which has been used as an experimental orchard. With the help of these data, compiled over three years, the author has established an estimate of the costs and profits of an imaginary plantation of 10 acres, carrying 250 trees to the acre. At the end of the second year the profit comes out at 1216 rupees. In the total sum of the returns there figure : (1) sale of the papain (416 lbs. at 12 rupees the lb.) producing 4992 rupees, (2) sale of the fruits, producing 3750 rupees.

The economic conditions in British India and Java are too diverse for comparison to be possible between these two estimates. It appears to be easy in Cawnpore to effect sale of the fruit ; in Java there are difficulties, since the papaya is everywhere cultivated and there is always a great abundance of the fruit. In



addition in connection with Cawnpore the sale of tomatoes is mentioned, producing 263 rupees in the first year of the trial plantation.

Uses of papain. — The utilisation of papain centres round the proteolytic activity of this enzyme. It would be going too far afield to treat here of all the work done by chemists in connection with papain, its proteolytic activity and the products resulting from its effects as a solvent. Some mention may be made of recent experiments performed by RINGER and GUTTERINK, quoted by HOFSTEDE. These chemists, who worked with a pure papain dried *in vacuo* under the supervision of HOFSTEDE have observed that there are two optimums of action in these samples, one in an acid medium ( $\text{pH} = 2.5$ ) and the other in an alkaline medium ( $\text{pH} = 11$  about). According to circumstances, there is sometimes found another optimum corresponding to the  $\text{pH}$  values 3.75, 4.0, 4.5, or 7.1. These two workers also succeeded in preparing a papayotin the maximum activity of which attains 40 per cent. of the maximum activity of pepsin.

Papayotin can only with difficulty compete with pepsin, which is much less costly and has a proteolytic activity much more intense. This is the opinion expressed in a communication made through the firm F. WITTE of Rostock. Mr. F. WITTE writes that he has used papain for some ten years for the manufacture of ferments and for technical applications. But, in spite of all endeavours the number of purchasers remains limited. It appears that small consignments received regularly at Hamburg remain for some considerable time in the warehouses before finding purchasers. This is attributed by Mr. WITTE to the fact that the proteolytic activity of papain is lower than that of the animal ferments. The text of the letter may be quoted: « Non-purified papain dissolves a quantity of albumin 200 times its own weight. Hence to digest 10,000 lbs. of albumin, 50 lbs. of papain would be required, while one lb. of pepsin is enough to produce the same effect; it should be added that the price of a lb. of papain is about 10 s., while that of pepsin is about 2 s. the lb. ».

It is however somewhat strange that the same chemical firm wrote in 1927 to HOFSTEDE that in its opinion properly prepared papain might have a great future. Reference may be made once more to the extent to which the importation of papain is developed in the United States. No information is available as to the methods of utilisation of all these consignments to the United States, and hence all that can be done here is to enumerate the various uses mentioned in publications consulted.

In the first place reference should be made to the use of the latex of the papaya for making tough meat tender. It has been said that this result can be obtained by merely covering the meat with leaves of papaya; and even all that was necessary was to hang a piece of meat among the branches of a papaya tree. But these are merely fables. Actually latex dissolves meat only when it comes in direct contact with it; the dissolution proceeds gradually towards the interior of the meat; it is however impossible for the inner parts to become tender until the external portions are completely dissolved.

Papain is used medicinally as a digestive to replace pepsin; but the importance of this use can only be small for two reasons: the high price and the

difficulty of obtaining papain in good condition which has preserved its full proteolytic activity.

Mention should be made of the employment of papain in the combatting of cancer. It has proved possible to effect the disappearance of the carcinomas by injection of a solution of papain. In addition papain has been applied to dissolve the false membranes which are formed in cases of diphtheria. It is also used as a vermifuge.

Papain solutions have been utilised for reduction of fat and also as rennet. In regard to cheese manufacture, experiments made in the Netherlands, at the Hoorn Experiment Station, have shown that milk curdles in eight seconds if a 4 % addition is made of a 10 % aqueous solution of papain. If a less concentrated solution is used, coagulation is extremely slow ; but it may be accelerated by adding 5 cc. of HCl to 100 cc. of milk ; it appears however that this acidification may be a disadvantage in practice.

It is certain that papain sometimes enters into the composition of « chewing gum » in America, which may perhaps be the explanation of the imports into the United States.

It should be added that certain patent remedies contain papain although not enough is known on this point. HOFSTEDE mentions an « essence of caroid » an American product, and lakutate, papaoid and pepsithine of German origin. Papain enters also into the composition of various milk flours.

The uses of papain are, in short, only very imperfectly known, but it is known that large quantities are imported into the United States. It would be interesting to know to what use these imported quantities are put, and to enquire more closely into the utilisation of papain.

Utilisation of the fruit (papaw). — In certain cases the fruit may contribute something to the returns from a plantation. The collection of the latex has no effect on the taste of the fruit which may quite well be consumed in the ripe state for a certain time after being tapped. But local sale can occur only if there is a town at a short distance from the plantation. The various forms in which the fruit is consumed are indicated by HOFSTEDE and by POPE. HOFSTEDE recommends in addition drying the fruit as is the practice with apricots.

It appears that the « flakes » thus prepared contain 10 % of the moisture and 50 % of the sugars and that the vitamins of the ripe fruit are preserved if the drying is effected properly.

There was formerly an export of fresh papaw fruit in refrigerating chambers from Hawaii to the Pacific ports of North America. After the appearance of the Mediterranean fruit fly at Hawaii, the imposition of quarantine measures put a stop to this trade.

W. BALLY.

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Some recent publications only are referred to below. For earlier publications the reader is referred to the bibliographies given by HOFSTEDE and POPE.

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### Milk Bottles.

In 1878 the first bottled milk was put on the market at Brooklyn (U. S. A.). At first beer bottles with patent stoppers were used. In 1889 card-board discs began to be used to seal the bottles. To begin with only guaranteed milk or special milk for infants was put into bottles; then later milk was delivered in bottles at public markets, schools, offices and factories, and finally it has come to be used for general home consumption, cooking included. To-day, in addition to ordinary milk, skimmed milk, sour milk, whey and butter milk are sold in bottles.

The bottles were at first a different shape in every country and even varied from one dairy to another, but naturally as their use became more general, each country gradually adopted a standard type.

In the United States the "common sense bottle", with a neck 42 mm. in diameter, is used to-day. By the American method each bottle must contain the exact amount, and be filled up to the precise mark. The manufacture of these bottles is controlled by the authorities and any which are in any way irregular are discarded. The factories can turn out bottles which are extremely exact, because the demand for them is great enough to cover the cost of expensive machinery for blowing glass. There are usually three measures, quart, pint, and half pint.

In Germany they have introduced the "DIN" (Deutsche Industrie Normflasche) in three measures, litre,  $\frac{1}{2}$  litre and  $\frac{1}{4}$  litre, which practically correspond to the American measures.

The bottles are usually made of glass; but sometimes of paper and occasionally of steel. Glass-bottles offer many advantages, in that they are easy to clean and their cleanness can be easily controlled; the milk contained in the bottle is protected by a guaranteed stopper from infection, dirt or tampering. In addition to this the purchaser receives the exact amount which he has paid for. These advantages explain why milk sold in bottles tends to take the place of loose milk, in spite of its increased cost.

The points most frequently brought up against glass bottles are these: they are fragile, they weigh heavy, they are expensive and they require cleaning.

The length of time these bottles last depends on their quality, on how they are handled when they are washed and when they are taken on the rounds. In any case a glass bottle only lasts a certain time. It is estimated in the big American establishments that a bottle is used on an average between 30 and 40 times.

### WASHING

The number of bottles to be washed has naturally increased with the larger consumption of milk sold in this way. On their return the empty bottles must be sorted out according to how dirty they are, and what trade-mark they bear; and finally those which are cracked must be thrown away. As well as removing stains and the repair of seals and labels the cleaning process must also effectively destroy any disease-bearing germs which may be contained in the bottles. The cleaning must be effected with the minimum of breakages and with as little manual work and waste of effort and as few chemicals as possible. The difficulties which arise in the washing process are due to the fact that bacteria can easily develop in any dregs of milk which are left in the bottles and remain there for any length of time. On the other hand when bottles have been used for other purposes a special process is necessary.

There are several methods of cleaning: mechanical washing with brushes and jets of water; chemical washing with salts having an alkaline reaction, for example bisodium or trisodium phosphate, carbonate of soda, or caustic solutions, to which must be added silicate of soda to protect the machinery from corrosion; bacteriological cleaning, using mainly organic and inorganic compounds of chlorine on account of their bactericidal properties.

The mechanical, chemical and bacteriological processes are effected in a tank at a temperature of between 30° and 35° C as a preliminary soaking; later the temperature is increased to 60°-65° C for the chief soaking.

The chemical substances employed in washing must dissolve grease, remove stains, soften the water sufficiently, destroy germs, retain their efficacy, be neutral in relation to iron and metals, leave no deposits in either the bottles or cleaning tanks, not make a lather when they are warm, and they should be efficacious in small quantities and reasonable in price.

The water must have, from chemical, bacteriological and hygienic points of view, the same qualities as a good drinking water.

The machines must be constructed in such a way as to make the utmost use of the chemical preparations.

The tanks, brushes and apparatus for soaking must be regularly cleaned. The concentration of the lye, according to the amount of cleaning required, should vary between 0.2 to 1 per cent; it will be low when the alkaline quality of the chemical substance used in the cleaning is high, and high when the temperature is low. The minimum temperature necessary is 55° C. and the maximum 70° C. If this temperature is exceeded the bottles are inevitably broken. It is better to work with the lye only slightly concentrated but to make provision for the frequent refilling of the tank, that is at least every three days, whilst control should be effected daily.

The washing apparatus or machinery is constructed according to four main systems :—

(1) The bottles placed upside down in cases are plunged with the cases into baths. They are raised by a moving-rack or scrubbed by a special apparatus. This type of apparatus has been almost entirely abandoned on account of the considerable amount of manual-work which it entailed.

(2) The bottles placed upside down in cases, are passed through a tube in which, without being submerged, the bottles or cases are cleaned by means of jets of water.

In England or the United States machines of this type have been introduced on a large scale. One machine of this type can wash 60,000 bottles. Under the machine are placed five tanks at a temperature of 45°, 50°, 60°, 75° and 90° C respectively; the water is pumped vigorously over and into the bottles which are discharged warm from the apparatus. They are then put aside to be refilled when they have cooled sufficiently.

(3) The bottles are placed upside down on a moving rack and pass one by one or in groups over jets of water.

(4) The bottles are placed one by one either by hand or by a mechanical contrivance in portable baskets, and passed through baths or over jets of water or scrubbing machines. Here two kinds of machinery must be distinguished : —

(a) machines of the chain type, with soaking tanks, jets of water or brushes.

(b) machines of the drum type, with soaking tanks and jets of water.

All the washing machines are now constructed on the lines of this fourth type because the output per hour is high, they are sufficiently economical as regards manual work, breakages are low, and at the same time they turn out bottles which are thoroughly well cleaned.

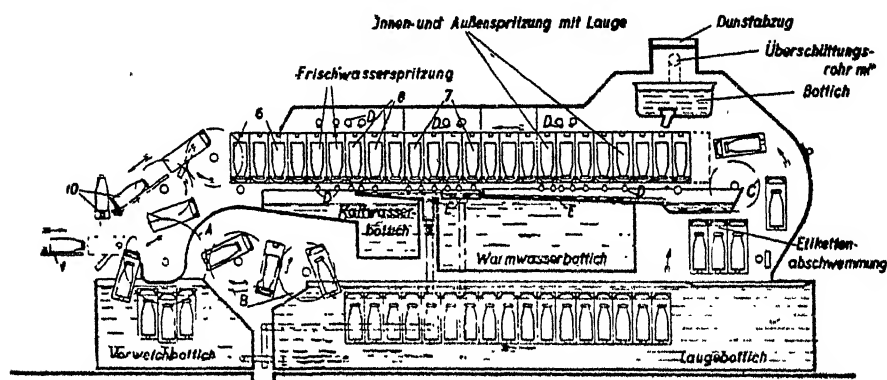
The preliminary soaking apparatus, provided with scrubbing machinery and jets of water under pressure, consists of three main parts : the soaking tank (70° C), the scrubbing machine, and the rotating table fitted with pumps for operating the jets of water which give the final rinsing. The tank has an outlet for the dirt and a grating at the bottom, and a wheel, half submerged, for immersing the bottles. The dirty bottles are fitted on to the wheel and after 25 minutes they come out thoroughly soaked. In the scrubbing machine the arrangement of the brushes can be either vertical or horizontal. The rotating table which supplies the final rinsing consists of either two or three sets of jets, according to the size of the table. This rinsing apparatus is provided with strong jets of water, supplied by centrifugal pumps, which play outside and inside the bottles. The bottles are passed in turn over the jets from which the water for the preliminary rinsing, then warm lye and finally hot and cold water for the final rinsings are discharged.

The machines are made up of the following parts : a frame supporting the rotating table in the type which work along circular rails; a movable-rack with pockets for the inverted bottles in the type which work along straight rails. The upper and lower sets of pipes are fixed. In all the machines the drive is intermittent so that the bottles remain stationary for a certain time over the jets.

*Machines, not of the chain type, having soaking tanks and water jets.* — In some machines, carriers for the bottles, fitted with tubular pockets, which accord-

ing to the size of the machine can hold from 16 to 22 bottles placed side by side, are not fastened to the machine but are inserted on rollers one at a time into the machine. As shown in fig. 1. the bottle containers are carried by means of a wheel (A) and fitted into the tank for the preliminary soaking. The carrier is made to describe a complete circle and then placed on a rail, by means of two wheels (B). This rail runs inside the principle tank where the bottles are pushed slowly along by means of pusher bars from one end to the other. A lifting apparatus raises the container at the end of the soaking tank on to a wheel (C) which

FIG. 1. — Bottle washing machine of the non-chain type, "Seitz B. L.", with soaking tank and water jets, (vertical section).



A = The wheel which deposits the bottle containers in the soaking tank.

B = The wheel which makes the bottle-containers describe a complete circle.

C = The wheel which inverts the bottles to empty them.

D = The projection of lye over the outside and inside of the bottles (« Innen-und Aussenspritzung mit lauge »).

1 = Insertion of the bottles. — 2 = Preliminary soaking. — 3 = Immersion in lye. — 4 = Lye rinsing. — 5 = *Idem.* — 6 = Draining. — 7 = Hot water rinsing. — 8 = Cold water rinsing. (« Frischwasserspritzung »). — 9 = Draining. — 10 = Discharge of bottles.

Vorweichbottich = Tank for the preliminary soaking. — Laugebottich = Lye tank. — Etikettenabschwemmung = Removal of labels. — Überschüttungsrohr mit Bottich = Tank and projection pipe. — Dunstabzug = Vent. — Warmwasserbottich = Hot water tank. — Kaltwasserbottich = Cold water tank.

inverts the container so that the mouth faces downwards and the bottle is consequently emptied. The wheel deposits the bottles on a moving upper rail.

The third part of the washing process consists of a rinsing in lye. Lye is therefore projected over the outside and inside of the bottles (D). There remain the following operations to be effected: draining, then hot and cold water rinsing, then a second draining and finally the clean bottles are lifted out

*Machines of the chain type with soaking tank and jets of water.* — In these machines the cleaning is effected in the following manner:

(1) The bottles are given a preliminary soaking at a temperature of 35°-40° C. (2) They are emptied by means of a wheel which turns them upside

down. (3) They are given the chief soaking in lye at a temperature of 60°-70° C. (4) They are emptied and the first rinsing with lye, repeated three times (at a pressure of 3 atmospheres), is followed by other lye rinsings whilst the bottles are carried along by the next wheel and the chain wheel. Not only is the lye projected over the outside and inside of the bottles but they are also submerged. (5) The bottle containers are brought back to a horizontal position and then the bottles—mouth downwards—are drained. (6) The projection of hot water and the final rinsing are effected on the central chain wheel. (7) Three rinsings with fresh cold water inside and two over the outside of the bottles. (8) The remainder of the journey until the bottles are lifted out consists of draining and drying. (9) The bottles are discharged on to a conveyor.

*Machines of the drum-type with alternate soaking and rinsing.*— In this type of machine some have several drums one beside the other, usually three in all. The soaking takes place in the lower part and the rinsing in the upper part.

As shown in fig. 2, a grid moving at regular intervals from one side to the other in front of the drums receives the dirty bottles which it inserts into the pockets (C) of the first drum by means of a connecting rod (B). They are conveyed

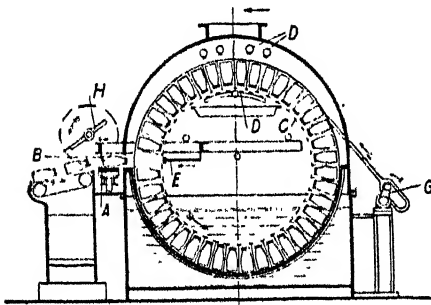


FIG. 2. — Washing machine «Phoenix Novissima», of drum type with alternate soaking and rinsing (vertical section).

- |                    |                    |
|--------------------|--------------------|
| A = grid           | E = discharge      |
| B = connecting rod | F = lifting device |
| C = pockets        | G = handle         |
| D = jets           | H = entry          |

through the first immersion tank (lye at a temperature of 35°-40° C), and emptied as they rise to receive the first internal and external rinsings from the jets (D). A discharge apparatus (E) returns them to the moving grid (A) which carries them to the second and third drums for final treatment and finally passes them out clean. A lifting device (F) sets the bottles upright and deposits them on the conductor which carries them to the machine which draws them out.

With all these machines the following points must be observed:—

(a) In the scrubbing machines the brushes must be cleaned daily with a special solution and then hardened with alum. Also the brushes must be renewed before there is risk of the bristles beginning to come out and remaining in the bottles.

(b) The rinsing apparatus must be continually inspected to see that the nozzles of the jets are functioning regularly and that after the cleaning process they are still in a horizontal position so that the jet is directed directly into the mouths of the bottles.

(c) The drive control of the machines must indicate the prescribed number of revolutions, for the results obtained in a washing machine depend

on how long the bottle is submitted to the processes of washing, rinsing and brushing.

(d) If the number of bottle breakages is more than 0.3-0.4 %, the matter must be immediately looked into, for in normal circumstances the new bottle washing machines work so smoothly that breakages can result only from too high a temperature. .

(e) The machines can all clean litre or half litre bottles without any adjustment being necessary and most of them can also clean  $\frac{1}{4}$  or  $\frac{1}{8}$  litre bottles. In regard to these last there is often some disorder in the machinery automatically depositing the clean bottles.

(f) Nearly all the machines can be worked by direct or recovered steam.

### FILLING AND SEALING

When the bottles are properly cleaned they are ready to be filled with milk. If even the slightest danger of any new infection is to be avoided, the bottles must be properly filled and sealed. In regard to the filling process there must be an apparatus which fills the right amount of milk into the bottle, either by means of a measure, or up to a certain mark, without wastage or causing too much foaming.

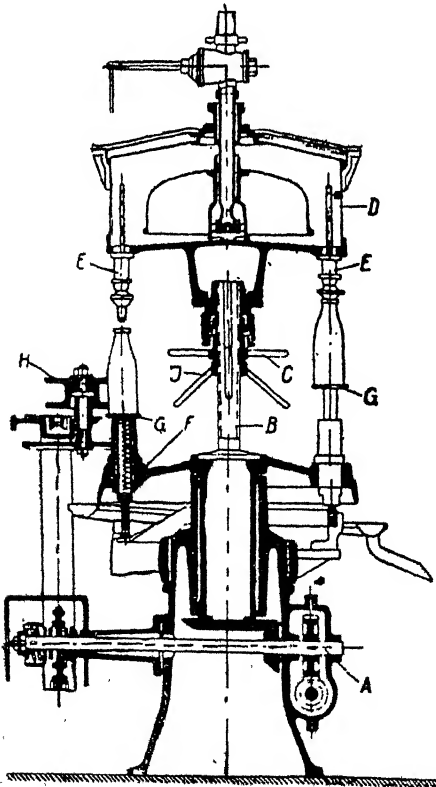


FIG. 3. — *Automatic Filling Machine.*

A = Driving shaft

B = Support with adjustable top

C = Regulating wheel

D = Milk tank

E = Filler valves

F = Rotating table

G = Flexible plates

H = Guide wheel



*Machinery and apparatus for filling.* — Filling can be done in three ways:

(1) By means of a siphon, which sucks the milk up from a tank standing beside it, and has a discharge pipe which enters into and fills the bottle.

(2) The bottle is placed beneath a tank from which the milk is drawn off into the bottle by a valve.

(3) The bottle is filled to the right measure either by receptacles or by valves. This method is used in various countries.

The machines are provided with 6-20 valves for drawing up the milk which fill from 1500-6000 litre bottles per hour and from 1800-8000  $\frac{1}{2}$  litre bottles. All the rotary automatic filling machines have more or less the same features (fig. 3).

The driving shaft (A) is in the lower part of the frame of the machinery. The tank (D) fitted with the filler valves is fixed on the vertical support (B), the height of which is adjustable. In the rotating table (F) are flexible plates on to which the empty bottles are pushed by a revolving guide wheel (H). The plates are raised by rollers on a curved track in such a way that on their arrival on the transporter they are at the same height as the chain conveyor. At the same time the bottles are pressed up against the valves which open and allow the milk to flow until the bottle is filled. Then the curved track lowers the plates to the level of the conveyor, whilst the guide wheel pushes the filled bottles on to the conveyor for discharge. The flexion of the plates allows for a variability of 20 mm. in the size of the bottle.

The machine is adjusted to fill bottles of a different size by a wheel (C) which is made fast when the adjustment has been effected.

*Machines and apparatus for sealing the bottles.* — The bottles must be sealed in such a way that the seal or its guarantee is destroyed in the opening process. The bottle or the seal must be marked with the name of the filler, and show also where the bottle was filled, what kind of milk it contains, whether the milk is raw or pasteurised and in the case of special milks the date must also be indicated.

The seals must comply with the following requirements:— they must be neat it must be possible to inscribe them in some way; they must be easy to apply without damaging the top of the bottle, and on the other hand easy to take off and destroy without the use of tools, but impossible to replace by hand.

The seal must not affect the flavour of the milk, and must permit of no leakage. The flange of the bottle must if possible be covered, and finally, the cost of the seals and their application must be as low as possible.

The seals can be of either card or metal. Metal seals are generally in the shape of a cap, whilst card seals are either disc-shaped or in the form of a cap.

When the seal is of card it is generally disc-shaped. It is pressed out from cellulose to the thickness of 1.2 mm. and waxed on both sides. If it is not waxed the milk can leak out and the disc becomes soft and loses its shape. This occurs also if the disc is waxed only on one side.

Aluminium caps have been found very satisfactory. A sheet 0.1 mm. in thickness is sufficient to make a secure seal. Caps either with or without card

linings have fulfilled expectations and caps made from a strip of aluminium give highly satisfactory results.

Rotating machines which both fill and seal have taken a prominent position among the completely automatic machines. These machines consist of an upright and drive, a rotating table with the stamping presses, the valve cap and a tank. Two guide wheels carry off the bottles for filling and pass them on for sealing.

This apparatus can be used for applying either discs or metal caps. There are several different types for the latter: some secure the caps which have been put in position by hand, some secure caps whether hand or machine adjusted, some apply, shape and fix the discs, and finally some cut out the caps from a strip of aluminium, and shape, stamp, apply and fix them.

The application of cardboard discs by hand is effected with a plunger handle. A supply of discs is held in a magazine in the capper and each disc is driven home with a single light blow of the plunger handle, operated by the right hand, the bottle being held in position by the left hand. A band of rubber prevents the disc being damaged by excessive force. In the rotating fillers the sealing apparatus is usually fixed to the support. A guide wheel places the filled bottles on the plates of the rotating table, which presses them against the sealing apparatus which, owing to its elasticity, withdraws after having applied the discs. Card discs must be applied horizontally. In the case of metal caps the edges of the aluminium must be shaped round the flange of the bottle.

When the bottle is duly cleaned, filled and sealed it is ready for sale to the public. Special crates, made of wood or iron are made for use as bottle carriers. It would seem that iron-bottomed wooden crates are most satisfactory, being easy to clean, and giving adequate protection against breakage. There are special machines for cleaning the crates.

The sale of milk in bottles has had a remarkable success in many countries. In those countries in which the dairy methods are advanced the sale of milk is regulated by law, and it is to be hoped that within a few years the sale of loose milk will be entirely replaced by that of bottled milk.

E. GASSER.

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## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

SCIENTIFIC ACTIVITY OF THE NATIONAL METEOROLOGICAL OFFICE OF FRANCE IN REFERENCE TO AGRICULTURE. — A very interesting communication on this subject has been made by Gen. DELCAMPRE, Director of the Office (O. N. M.), to the Agricultural Academy of France (22 March 1933), of which a short summary is given below.

From the time of its creation the O. N. M. has been continually endeavouring to teach the farmer that weather forecasting is not by any means the only part of meteorology that concerns him, but that climatology with its applications to the selection and acclimatisation of crops is at least of equal interest.

In order to obtain first hand information about the requirements of farmers the O. N. M. distributed widely a questionnaire, to which it received about 600 replies, representing the opinions of several thousand farmers as in many cases the forms were filled in by the presidents of farmers' associations. Advantage has been taken of many of the suggestions received and they have been given effect.

On the other hand progress in meteorology would be of little benefit to agriculture if the farmer were not capable of understanding and utilising it. The O. N. M. has therefore made every effort to diffuse the necessary knowledge by means of public lectures and broadcasting, competitions and agricultural congresses, monthly publication of information relating to the influence of the meteorological conditions of the preceding month on crops, distribution of leaflets setting forth the applications of meteorology to agriculture and explaining meteorological instruments, setting up simplified meteorological posts for the use of farmers, etc.

On the initiative of the O. N. M. a *Commission de Météorologie horticole* and a *Commission nationale de Météorologie agricole* have been formed to keep the Office constantly in touch with the needs of farmers. There is also a *Section d'application de la météorologie* of the National Institute of Agronomy which has been recently founded by the O. N. M. and has begun its activities this year. There is also to be formed a new Service composed of agricultural graduates and experts on agricultural subjects.

The O. N. M. has investigated a number of questions relating to the application of meteorology to the practical requirements of agriculture, for example: — The effects on crops of the cold weather of 1927-29-32, of the drought and storms of 1929, the drought and storms of 1929, the floods of 1930, etc. — Correlation between seasonal meteorological factors and crop yields. — Principle of a method of forecasting crop yields. — Frost protection tests. — Work relating to hail.

T. B.

#### Soil Science.

CLASSIFICATION OF INORGANIC SOILS ACCORDING TO THEIR CONTENT IN HYDROCHLORIC ACID SOLUBLE ALUMINIUM. — The division of inorganic soils into sandy, loamy and clayey soils is valuable for their classification and for their evaluation on the preparation of agronomic maps. This division has hitherto been based on the grades of fineness of structure obtained as a result of mechanical analysis and goes back as far as the famous agronomist A. THÄER, that is, more than a century back. More recently (1922) R. GANSSEN (Berlin) showed the importance of the content in aluminium soluble in hydrochloric acid as a criterion for the classification of inor-

ganic soils and gave a first scheme of classification based on aluminium. His views have been fully confirmed by later workers.

M. Kurt UTESCHER has carried out researches to determine which of the two criteria is best for the classification of inorganic soils and has submitted to comparative analyses upwards of 300 soil samples collected by the Geological Institute of Prussia. The results are fully given in the *Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde* (Berlin 1933, Teil A, Band 28, Heft 3-4), and the following are the conclusions reached :—

(1) The division of soils into groups according to fineness by means of mechanical analysis would not appear to be a suitable method of classification as sandy, loam or clay.

(2) A better method in this regard is classification according to content in hydrochloric acid soluble aluminium, which gives the following results :—

Percentage of hydrochloric acid soluble aluminium	Soil names in German	Corresponding English terms
Less than 0.7 . . . . .	Sand	Sand
0.7–1.0 . . . . .	Schwach lehmiger Sand	Slightly loamy sand
1.0–1.3 . . . . .	Lehmiger Sand	Loamy sand
1.3–2.0 . . . . .	Sandiger Lehm	Sandy loam
2.0–3.0 . . . . .	Schwach sandiger Lehm	Slightly sandy loam
3.0–4.0 . . . . .	Lehm	Loam
Over 4.0 * . . . . .	Ton	Clay

In the numerical tables given the percentages in excess of 4.0 reach 7.56.

It may be of interest to recall that at the International Agricultural Congress held in Rome in 1903 a similar classification was put forward based on the content in clay. (Cf. VIIth International Congress of Agriculture, Rome 1903, Reports and Communications, Vol. II, p. 195, T. BIELER, « Procédés rapides d'analyse physico-chimique des terres arables »).

RELATION BETWEEN THE COLOUR OF SOILS AND THEIR CONTENT IN IRON OXIDE AND HUMUS. — Interesting studies on this subject have been carried out by M. K. UTESCHER and are reported in the *Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde* (Berlin 1932, Teil A, Band 26, Heft 5-6). The main results are as follows.

The most important factors for the colour of soils do not act only by their mass, for they are not always present in large quantities.

As regards ferric oxide ( $\text{Fe}_2\text{O}_3$ ), the important and decisive factor is the ratio  $\text{nSiO}_2 : 1 \text{ Fe}_2\text{O}_3$  in the hydrochloric acid soluble part of the soil. This opinion, which was first put forward by R. GANSSEN, has been confirmed by the writer : when there are more than 6 molecules of  $\text{SiO}_2$  for 1 of  $\text{Fe}_2\text{O}_3$  a grey soil may be expected ; when there are less than 2 molecules of  $\text{SiO}_2$  for 1 of  $\text{Fe}_2\text{O}_3$ , the colour is dark brown ; and between these two extremes they will be greyish brown to yellowish brown.

A red coloration probably results from less hydration.

In no case was it proved that soil colour was influenced by the content in ferrous oxide ( $\text{FeO}$ ).

The important factors in regard to the humus are its distribution in the soil (which depends largely on its origin), and the depth of coloration of the inorganic

part of the soil, inasmuch as grey soils (in which the ratio  $\text{SiO}_2 : 1 \text{ Fe}_2\text{O}_3$  is greater than 2.4) are coloured much more intensively black by humus than are brown or red soils (in which the ratio is less than 2.4).

The coloration given by humus is generally masked by that resulting from the silica-ferric oxide ratio.

In a general fashion, although the above factors have a certain influence on the colour of soils they are not the only controlling factors, and the problem raises various questions which merit further study.

T. B.

### Fertilisers and Fertilising

IMPROVEMENT OF CHALK SOILS IN CHAMPAGNE, FRANCE. -- An interesting article on this subject is published in the *Journal d'Agriculture pratique* (1933, No. 9) by MM. C. LATITE and J. CAUDRON.

Complying with a request from the Director of Agricultural Services of the Department of the Marne the writers collected a quantity of information from farmers which reveals the remarkable progress achieved in the Marne. The wheat yields have considerably increased (from 18 quintals to the hectare in 1923 to 26 quintals in 1932) and on many farms where formerly only rye was grown heavy crops of wheat are now obtained.

When farmers of more fertile regions hear of these results they enquire how it is that on the poor soils of Champagne such yields have been achieved. The reply is simple. The progress is due in the first instance to improved cultural methods, and to a lesser extent to the use of chemical fertilisers (mainly potash) and improved varieties. The land is better tilled now than formerly: the practice of surface working particularly, of stubble ploughing, has spread, but it is the increasing depth of ploughing that has been the decisive factor in the success. This was recommended by the writers as a result of the following observations. In the first years following the war they observed (at the Ferme des Anglais) that winter cereals sown at the end of September had a more luxuriant growth along the line of the old trenches where, however, the soil was inferior in quality to that in the adjoining ground which had not been turned over and mixed with large quantities of chalk. They therefore concluded that the deep trenching had improved the crop.

During the last ten years a cooperative ploughing society which was formed in the district of the Ferme des Anglais has ploughed and broken up all the beet land at the beginning of the rotation to a depth of 45-50 cm. To avoid bringing the chalk to the surface of the shallow soil a double plough is used which cuts two furrows, one above the other, each 25 cm in depth, so that the layer between 25 and 50 cm remains always at the bottom.

In spite of this precaution the operation appeared so daring that the farmers feared failure, but on the contrary an improvement in the spring crops was immediately observed. In certain fields it is true the plough brought to the surface some virgin soil and even a little chalk, but the beet did not suffer because the numerous other tillage operations incorporated the new soil with the soil mass.

Champagne being a dry region the writers had many times declared that the cultivation of spring oats and beet could give only poor results and for this reason had sown much more land to winter oats than to spring oats. But since the adoption of the practice of ploughing to 50 cm the situation is completely reversed, as is seen in the following figures showing the average yields obtained per hectare at the Ferme des Anglais.

	Winter oats	Spring oats
Average yields of 1925 . . . . .	34.80 quintals	17.25 quintals
Average yields of 1932 . . . . .	27.28 "	32.20 "
Averages of 1930-1932 . . . . .	23.50 "	29.80 "

The improvement in the unit yield is not confined to oats but is even more apparent in the case of sugar beet :

	Metric tons per hectare
Average of the ten pre-war years . . . . .	2.3
Average of 1922 to 1932 . . . . .	2.8
Increase over the pre-war figure. . . . .	5
Average of 1930-1932 . . . . .	3.5
Increase over the pre-war figure. . . . .	12

In the case of wheat, as the writers expected, the deep ploughing was not able to produce as definite a result as with the spring crops. The yields have however steadily increased as a result of growing more productive varieties and improvement in the technique of cultivation.

In order to obtain the manure necessary for beet (40 tons per hectare) the stock animals were fed up during winter and at all seasons artificial or semi-artificial manures were prepared and applied to the fields when having the consistency of butter and immediately dug under. In this state the manure acts directly on the beet and produces a better tilth in chalky soils.

Where the quality of the subsoil does not permit of bringing it to the surface the subsoiling plough gives a great improvement in the yields.

Thus the writers have shown that as a result of deep ploughing Champagne has been converted from the poor rye growing region of former times to one of the foremost granaries of France and its yields in spring oats and sugar beet are now equal to those of the fertile silt soils.

SOIL INOCULATION WITH NODULE BACTERIA OF *SERRADELLA* IN GERMANY. — The following results, reported in the *Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde* (Berlin 1933, Teil A, Bd. 29, H. 4-6), were obtained by M. H. RHEINWALD at the Higher School of Agriculture of Hohenheim (Wurtemberg).

The experimental soil, which was completely free from the serradella root nodule bacteria, was divided into 4 series of 3 plots each (of 4.5 sq. m) and treated as follows, then sown with serradella.

In the inoculated plots (series 3 and 4) the serradella immediately showed a good development of root nodules. No nodules were formed in the non-inoculated plots (series 1 and 2).

Series	Inoculation	Fertiliser
1 (control) . . . . .	—	—
2 . . . . .	—	60 kg. N per hectare as ammonium sulphate.
3 . . . . .	3 kg. per plot of soil from a serradella field.	—
4 . . . . .	6 kg. per plot of the same soil.	—

Inoculation appreciably increased the serradella crops as compared with the control plots.

The serradella crops of series 2, 3 and 4 contained the following quantities of nitrogen in excess of the crops from the control plots which were not inoculated and received no fertiliser:—

Series 2 ( 1 ammonium sulphate) . . . . .	40.4 kg N
Series 3 ( 1 3 kg of soil per plot) . . . . .	59.2 " "
Series 4 ( 1 6 kg of soil per plot) . . . . .	46.8 " "

These figures show the superiority of the inoculated plots over those not inoculated, even when the latter had received a dressing of nitrogenous fertiliser.

T. B.

### Crops of Temperate Regions.

ARTIFICIAL HYBRIDIZATION OF RICE (*The Agricultural Gazette of New South Wales*, W. POGGENDORF, 1 April 1933). — It has been found that no technique of hybridization involving any mutilation, or even rough handling, of the glumes gives any success; the time spent in the delicate and tedious operation of emasculating unopened florets is out of all proportion to the results obtained.

Humidity plays a most important part in the success of artificial crossing. The damage inflicted on the very delicate florets by the usual methods of emasculation is increased by rapid desiccation where the normal humidity is very low. Various means of protecting the emasculated florets were tried, such as bags of various materials, etc., but all with comparatively little success, for the damage was apparently initiated before protection could be given.

During the course of these attempts considerable attention was paid to the conditions governing flowering and pollination. RAMIAH, describing a method in use at Coimbatore, India, states that, particularly where large numbers of crosses have to be made, the florets can be made to open without simultaneous dehiscence of the anthers by covering the chosen panicle with a brown paper envelope about 1 to 1½ hours before normal opening would occur. The anthers are removed and pollination done as soon as pollen can be obtained. It sometimes occurs however that on lifting the bag numerous anthers burst before they can be removed.

The following method is now in use. On bright mornings when the humidity at about 8.30 a. m. is high, promising relatively high humidity when the daily flowering period commences, or on dull, warm days, a recently emerged panicle likely to flower that day is chosen. As the florets commence to open the unburst anthers are removed with fine-pointed forceps, and fresh pollen from the chosen male parent is applied to the stigmas immediately. This process is continued until, owing to the decreasing humi-

dity, the anthers tend to burst on emergence, or until the required number of florets has been crossed. All unopened florets are then removed and the panicle is labelled, covered with a bag and the stem tied loosely to adjacent stems for support. Absolute freshness of the pollen is essential, and the best results are obtained with pollen from anthers which emerge whole, but burst on handling.

This method of artificial hybridization has several advantages over others, namely, the florets are in perfect condition for pollination, and the grains set are fully protected by the glumes.

D. K.

PROTEIN CONTENT OF WESTERN CANADIAN WHEATS. — From the Department of Trade and Commerce of Canada a map has been received prepared by F. J. BIRCHARD, illustrating the protein content of wheat harvested in 1932 in the provinces of Manitoba, Saskatchewan and Alberta. The results of 12,802 samples, collected near the railway lines, and tested for protein, are shown graphically on a map of the three provinces, showing the degrees of the protein content — from 10 to 19 per cent. — by means of 10 different shades of colour.

A zone of high content (14 to 17 %), surrounding Regina (Saskatchewan), and widening somewhat towards the north-west, may be noted. Starting from this central zone, the protein content diminishes progressively towards the east and also towards the slopes of the Rocky Mountains to the west of Saskatchewan. The protein percentage falls to the minimum (9 to 13 %) on the north, in the regions of Prince Albert (Saskatchewan) and of Edmonton (Alberta).

Some numerical data which accompany the map are of interest. For example, it is seen that the percentage of protein content, in 1932, a year very favourable from the point of view of this content, has varied between 8.5 and 19.2 %, the average being 14 %. However 66.7 % of the 12,802 samples examined had a content varying within much narrower limits: from 13 to 15.9 %. No close correlation is observed between the grade of the wheat and the protein content. The 2 Northern grade, however, seems to be markedly inferior from the standpoint of protein content. Actually the samples of this grade have shown an average content of 13.4 % as compared with 14.3 % in 1 Hard and 1 Northern and 14.3 in 3 Northern. The divergence between the maximum and minimum is also larger with 2 Northern (9.6) than with 1 Northern (8.43) and 1 Hard.

N. v. G.

FLUCTUATIONS IN THE CHEMICAL COMPOSITION OF BARLEY DURING THE RIPENING PERIOD. — It is generally admitted that if cereals are harvested before the point at which the majority of the grains become hard, there is a diminution not only in the yield per unit but also in the weight of 1000 grains. Fresh investigations, made by D. M. MACLEAN in Manitoba, have shown that the harvesting of barley a week before complete maturity does not diminish the unitary yield, nor the weight of 1000 grains.

Considerable fluctuations in the percentage of dry matter take place between the appearance of the ear and ripening, but this percentage increases with the approach of maturity. On the other hand, the protein content diminishes regularly during this period and throughout the plant, except in the ear, where the protein increases from the moment when the grains have reached the soft stage.

In these experiments, the sugar ratio increased rapidly from earing up to the 14th day following, falling afterwards equally rapidly to zero at the moment of ripening.

N. v. G.



VARIATIONS IN NITROGEN CONTENT IN LILAC DURING FORCING (*Comptes rendus de l'Académie des Sciences* : R. QUETEL ; 24 avril 1933). — What are the effects of ether and of damp heat in succession on plants capable of being forced ? Grafted lilacs have been treated in accordance with the current method : after uprooting on 2 October 1930, the plants were kept under shelter up to 13 November, when they were placed for 48 hours in a chamber containing ether vapour at the rate of 0.4 gm per litre of air ; they were then planted in a greenhouse at 34 to 36°, with an atmosphere saturated with moisture. In these conditions, the buds opened 6 days after etherisation.

*Conclusions* : Uprooting followed by etherisation places the tissues immediately in the chemical conditions of the spring growth. Apart from the increase of soluble nitrogen, forcing does not modify the nature of the nitrogen metabolism which accompanies the beginning of active life, but it has the effect of starting this metabolism before the normal date and accelerates its different phases which thus take place in a time about seven times shorter than the normal. D. K.

FLAX GROWING FOR SEED IN THE PROVINCE OF CORDOBA, ARGENTINA (*Boletín de Agricultura de la Provincia de Córdoba*, E. TERRAGO, No. 139, 1932). — Out of the 4377 501 hectares of cultivated land in the province of Córdoba 368 000 hectares are down to flax, this crop ranking third therefore, after wheat and maize, among the farm products. During the last ten years the total production of linseed has been 3 734 180 metric tons. On each farm flax is grown on 15-20 % of the land ; it is thus rather a subsidiary crop, the main crop being wheat. In spite of its importance flax growing is somewhat neglected, it being regarded as only a small source of extra income on the farm.

The farmer often neglects the necessary tillage, the cultural practices required in the region and the adaptation of rotation to the local weather conditions. In the province of Córdoba the heaviest rainfall occurs at the end of summer or the beginning of autumn when it is time to begin ploughing for the winter crops and renew their water resources. To avoid late frosts it is necessary only to sow at the right time in each zone. Seed disinfection should be a recognised practice.

It is found necessary in each region to select suitable varieties. Up to the present this selection work has not been carried very far in the country, which accounts for the low yields. The average yields during the last ten years have been 630 kg of seed per hectare, and in Córdoba even as low as 590 kg. With yields as low as this, the production costs are very high and it is impossible for flax to be a paying proposition with prices at their present low level. Improvement of yields by seed selection will alone be able to put flax growing on a paying basis. In 1928 the Córdoba School of Agriculture carried out yield tests with pure line selections of known varieties of flax and obtained the following remarkable yields :—

« Malabrigo » flax . . . . .	1170-1460 kg of linseed per hectare
Large-grained flax . . . . .	1276-1676 kg per hectare
Common flax . . . . .	1396-kg per hectare.

A comparison of these experimental results with the average yields obtained in practice shows that the improvement may be of the order of 50 % of the present production, which would make it possible to obtain an average of 9 quintals of seed per hectare and thus bring the production costs down to 5.2 pesos. This is a point of considerable interest when it is realised that an improvement of 2.5 quintals per hectare over the total area cultivated with flax would entail an increase in the total crop of about 1 million quintals and a corresponding increase in value of about 7 million pesos.

Flax must yield at least 8 quintals of seed to the hectare to be a paying proposition to the grower. D. K.

## Tropical and Sub-tropical Agriculture.

**TOXICITY OF SORGHUMS AND OF SUDAN GRASS.** — Researches recently carried out in Morocco by M. MIEGE show that: (1) the different varieties of sorghums examined all without exception contain considerable quantities of glucosides yielding on breaking down hydrocyanic acid, in amount sufficient to make them dangerous to live stock. This toxicity varies with the variety, and with the age of the plant and the conditions of development — (2) Contrary to the opinion generally held, certain fodder varieties, such as Sudan grass, which are usually considered to be harmless, were somewhat more poisonous for live stock. By selecting certain strains of Sudan grass it has been proved that it is possible to reduce the content in hydrocyanic glucoside to the point at which the plants are practically harmless; this is the case with Rhodesian Sudan grass. It is hoped to obtain the same result with sorghum.

Hay and ensilage made from forage varieties which are definitely poisonous when fresh, may be completely harmless.

(*Revue de Botanique appliquée et d'Agriculture tropicale*. Paris, February 1933).

G. S.

**HARVESTING AND CURING OF VIRGINIA TOBACCO IN SOUTHERN RHODESIA** (*The Rhodesian Agricultural Journal*, D. D. BROWN, March 1933). — The operations of harvesting and curing are of supreme importance to the tobacco grower; the value of the tobacco is dependent upon quality and mistakes in either operation cannot be rectified when once made. The following rules to be observed have therefore been set forward by the writer on the basis of long personal experience of growing Virginian tobacco in Southern Rhodesia.

Leaf must be harvested when it is suitably ripe for the process by which it is to be cured. Uniformity in harvesting makes for uniformity in curing. Green tobacco is of low value; every precaution must be taken to produce the minimum of undesirable leaf. Harvesting of tobacco is facilitated by having adequate barn accommodation. The tobacco should be carefully handled during the harvesting.

The curing of tobacco is a scientific process and requires to be studied as such. The barn should not be overcrowded; the leaf is damaged if too tightly packed for curing. The buildings and plant for curing should be put in working order before the crop is due for harvesting, and adequate supervision provided for throughout the harvesting and curing.

More tobacco than can be properly accommodated in the available buildings should not be grown, or a lower grade leaf will usually result. Every effort should be made to produce quality rather than quantity.

Provision for future fuel requirements should be made by planting trees to replace the indigenous timber already cleared off the land.

D. K.

**DELAYED GERMINATION IN COTTON** (*The Madras Agricultural Journal*, R. BALASUBRAHMANYAN and V. RAMASWAMI MUDALIAR, April 1933). — The factors causing delay in germination have been traced to both seed coat and embryo. The environmental and developmental causes leading to the presence of 'hard seeds' are an unusually dry period during the phase of crop maturation, and the extra vigour of the plant in the early stages of its growth. The delay in germination may therefore be attributed to the thickness of the seed coat and to the slow absorption by the weak embryo through the two points of contact with the seed coat. The differences ob-

served in the rate and total quantity of water absorbed are due to the differences in the composition of the seed coat and the environmental adaptations.

A rapid absorption and a lower demand for water are indispensable for the survival of *Gossypium indicum* and *G. herbaceum* because these two varieties are generally found in dry places. The higher minimum water needed for germination by the hard seeds may be due to the empty spaces between the weak embryo and the seed coat which get filled with water, or to the colloidal composition of such coats. The delay in the permeable seeds is due to the high breaking strength of the seed coat.

Various methods have been tried to quicken and improve the germination (partial removal of the seed coat, reduction of the seed coat thickness and modifying its colloidal nature by treatment with strong sulphuric acid and keeping constant temperatures of 30° and 45° C. in the incubator). These experiments have shown that the varieties possessing good embryos with hard seed coats could be modified to produce a more vigorous and better crop, but that those containing weak embryos could only be induced to germinate without very much adding to the yield.

D. K.

RELATION BETWEEN THE GROWTH HABIT AND SIZE OF COTTON PLANTS AND THEIR YIELD. — The conclusions reported below result from observations on 6000 plants belonging to 56 strains of selected varieties of *Gossypium indicum* cultivated at Nandyal. The investigations were carried out with a view to determining the correlations existing between the size, number of primary stems and internodes on the one hand, and the yield in cotton on the other.

It was found that for plants of the same variety there was very distinct correlation between the number of primary stems and the size of the plants and the yield. Genetic relationships between one variety and another are variable. The tallest types were not necessarily good yielders but the varieties with the greatest number of primary stems were most productive. The number of nodes was not of any great significance with regard to production, whether with plants of one variety or of different varieties.

The correlation between the yield and the other characteristics was more marked in normal plants than in those attacked by *Earias* sp.

A study of normal plants and those attacked by borers of all varieties showed that the latter had a definitely higher yield. This increase in yield was associated with an increase in the number of primary stems per plant. It was also observed though not in all varieties, that the greater was the attack on the main stem the greater was the yield.

A comparison with other varieties, such as "Cambodia" and especially "Uppam" (*G. herbaceum*), in which the effects of borer attack are just the opposite, showed that this difference of behaviour is attributable to the marked tendency of this variety to form primary stems.

The correlation between the primary stems and the yield was much more marked in the types with a tendency to a branching habit.

(S. N. VENKATRAMAN and C. JAGANATHA RAO, *The Madras Agricultural Journal*, Madras 1933, Vol. XXI, No. 2).

J. L.

### Agricultural Engineering.

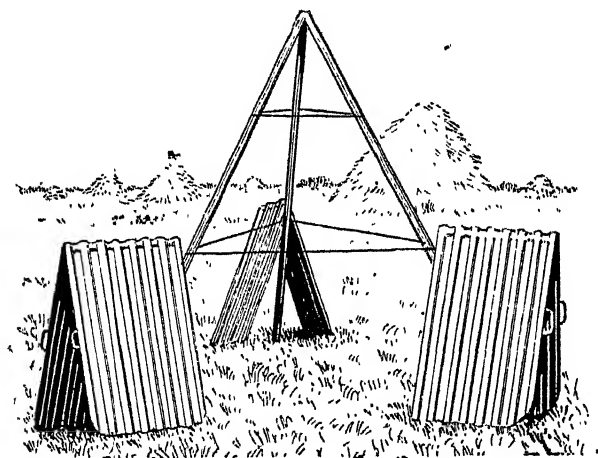
TRIPOD SYSTEM USED IN ENGLAND FOR DRYING FODDER CROPS AND CORN. — During haytime and harvest in 1932 many English farmers suffered heavy loss through the deterioration of crops owing to adverse weather conditions. It is claimed that such

losses can be avoided by the use of the tripod harvesting system invented by Mr. A. PROCTOR and described by Mr. J.M. TEMPLETON in the *Journal of the Ministry of Agriculture* (London, April 1933).

This is not a new principle, but an improvement on the drying racks used in Scandinavia, Scotland and some continental countries. The basic principle of the system is the air drying of crops by allowing circulation of air by means of ventilation shafts, which is calculated to dry out the crops in 2 to 3 weeks, according to weather conditions.

Within 24 hours of cutting the crops are built into « cocks » or « huts », 8 to 9 feet high, around a metal tripod, over which are slipped wire rings to form a strong framework; the vent constructors, consisting of sheets of corrugated iron (see diagram), are placed astride each leg, thus forming a triangular ventilation shaft.

Where corn is being harvested the tripods need not be set so wide, and only one ring is necessary. For fodder crops the tripods are set with a wide span and two rings are used. The equipment per acre consists of 6 to 8 metal tripods.



Tripod for green fodder with widespread legs and two rings, with air-vent constructors astride each leg. Note completed huts in background.

The labour required for hutting is not much greater than for ordinary cocking or shocking methods, but some care is necessary to build the sides of the hut as vertical as possible and to finish off with a sharp cone. Two men are employed using long-handled forks. After the completion of a hut the vent constructors are withdrawn, but it is advisable to inspect the vent holes at intervals and keep them clear.

**TARRED ROAD SURFACES: INCREASED COHESION AND DURABILITY BY INCORPORATION OF OIL POWDER.**— In the *Comptes rendus de l'Académie des Sciences* (1933, tome 197, n° 15) M. A. LÉAUTÉ describes experiments showing that finely powdered burning oils rich in volatile substances (upwards of 25 %) when mixed with the coal tar diminish its evaporation and ageing and therefore increase the cohesion, plasticity and durability of the road surfaces, giving them the qualities of bitumens.

**MODERN SYSTEM OF METALLIC JOINTS IN WOOD CONSTRUCTION.**— See p. 493-494 of this *Bulletin*.

## Animal Husbandry.

### Feeding and Feedstuffs

COMPARATIVE STUDY OF THE BIOLOGICAL EFFECTS OF WHEAT AND RYE FEEDS IN HUNGARY. — Research on this subject has been carried out by Profs. S. WEISER and A. ZAITSCHEK at the Institute of Animal Physiology at Budapest. Hay was fed to some goats from weaning to sexual maturity. One group received exclusively wheat, the other exclusively rye. The experiment lasted 312 days and at the end of the period no differences were distinguishable in the weight or in the body measurements of the animals. There were however marked differences in the external and biological qualities of the two groups. The males fed with wheat were badly shaped with a coarse coat and dull eyes, and were valueless as breeders; those fed rye were vigorous, well-shaped, with bright eyes and the qualities desired in breeding stock.

Trials of feeding pigs with wheat and rye showed that these utilise wheat better than rye for gain in weight; those which were fed mixed wheat and rye occupied an intermediate position. When the feeds were supplied *ad lib.* the pigs fed wheat consumed much more feed than those fed rye; rye can be said to have produced 20 % less live weight than wheat. The pigs fed rye showed all the signs of retarded development. The sexual organs were much better developed in the animals fed rye than in the others and the rut was more marked; the temperament of the rye fed pigs was altogether more active and vigorous than that of those fed wheat. The animals fed a mixture of wheat and rye again showed intermediate characteristics. (*Kisérletügyi Közlemények*, Budapest, 1933, fasc. 1-3).

E. M.

FEEDING TRIALS WITH HORMONE PREPARATIONS ON PIGS IN GERMANY. — Feeding trials carried out at the experimental Pig Farm-School at Hohehorst («staatlich anerkannter Lehrschweinehof») have shown that hormone preparations when fed to healthy pigs scarcely affect their gain in live weight or utilisation of feeds. The animals fed these preparations consumed much more feed but were unable to utilise the surplus. Healthy animals with good fattening capacity have no need of stimulants for increasing consumption if the ration is well balanced.

With animals in which development had been interrupted it was possible to detect a favorable effect from the application of the various preparations, particularly in the case of the «Harrizitin» preparations.

Studies on the action of the hormone preparations are not yet completed; those now in progress should establish the effect of these preparations when fed in different amounts. (*Zeitschrift für Schweinezücht*, Neudamm 1933, Nr. 41).

E. M.

### Horses

TRACTION TESTS WITH HEAVY DRAUGHT HORSES IN GERMANY. — The following figures give some idea of the progress of traction testing in Germany as carried out by the German Heavy Draught Horse Breeders' Association since 1927 when these tests were initiated by the Association (1).

(1) In this connection see in this *Bulletin*, 1932, No. 5, pp. 173-178, the article under the title *Present Methods of Testing Draft Animals and their Defects*.

Year	Endurance tests		Tests with dynamo-metric wagon		Total number of horses tested
	Number of tests	Number of horses tested	Number of tests	Number of horses tested	
1927 . . . . .	12	133	4	50	183
1928 . . . . .	19	243	24	422	665
1929 . . . . .	17	214	24	392	606
1930 . . . . .	23	275	17	262	537
1931 . . . . .	14	197	20	360	557
1932 . . . . .	19	255	29	132	687
Total . . .	104	1317	118	1918	3235

F. M.

## Cattle

COMPARATIVE YIELD TESTING IN CATTLE. GROWTH AND FEED CONSUMPTION. — In an experiment carried out at the Zootechnical Institute at Tschechnitz near Breslau, Germany, to study the development of 9 calves born in the same season of 1930, the feed consumption, the live weight and the body measurements were observed over a period of two years. The results of the experiments lead to the conclusion that the utilisation of feeds is due at least in part to hereditary factors. Animals having very high withers utilise badly their food. It is possible on the basis of body measurements to predict in very young animals their future utilisation of feed. The depth of chest and the girth behind the shoulders were found to have a special influence on the utilisation of feed. (ZORN W. KRALLINGER H., SCHNEIDER K., SCHOTT A., *Relative Leistungsprüfungen an Rindern: I. Wachstum und Futterverbrauch von 9 weiblichen schwarz-bunten Rindern von der Geburt bis zur erstmaligen Deckung im Alter von 2. Jahren.* — *Archiv für Tierernährung und Tierzucht*, Berlin, 1933, Bd. 9, p. 194-231.

S. T.

CORRELATION BETWEEN MILK PRODUCTION, ABSOLUTE PRODUCTION OF FAT AND PERCENTAGE OF FAT. — In a study recently published in the *Sborník* (Prague 1933, Vol. 8, No. 1, 2, pp. 93-154) M. KRIZENECKY discusses the question of the relation existing between the production of milk, the percentage of fat and the total production of fat. An experiment carried out on cows of 10 different breeds has resulted in the following conclusions: The variability in milk production and in total fat production are approximately equal; the variability in percentage fat production is much less than that in milk production and in total fat production. The coefficients of correlation between milk production and total fat production are always positive and very definite. The coefficients of correlation between milk production and fat percentage are negative and very slight. This negative correlation is however always counter-balanced by the much greater positive correlation between milk production and total fat production, so that the curve of fat production follows very closely the increasing curve of milk production. The study in question is illustrated by numerous diagrams.

S. T.

VARIATIONS IN FAT CONTENT IN THE MILK OF COWS WHEN TAKEN FROM THE SHEDS TO PASTURE. — The change from the sheds to pasture always causes a reduction in the milk yield and usually an increase in the fat content. In an experiment the fat content increased in only one third of the cows. Variations in fat content depend on a number

of factors, such as the stage in the lactation period, temperature variations, quality of the grazing, etc. General conclusions on the subject can therefore not be drawn. (K. L. CHRZASZCZ, Schwankungen im Fettgehalt der Milch beim Uebergang von der Stallhaltung zum Weidegang. — *Milchwirtschaftliche Forschungen*, Berlin 1932, 13. Bd., 4-6. Heft, p. 339-362).

S. T.

COMPARISON OF DIFFERENT METHODS OF HAND MILKING IN ENGLAND. — In the *Journal of the Ministry of Agriculture* (London 1932, Vol. XXXIX, No. 6) were published recently the results of an experiment undertaken to compare three methods of hand milking, namely, milking with clean, dry hands, with clean, wet hands and with clean, dry hands lubricated with vaseline. Thirty samples of milk obtained by each method were tested for bacteriological count and then sediment tests were made. In every case dry hand milking was found to be the best. It is interesting to note that this method gives milk completely free from *Bacillus coli*, containing few other bacteria and very little sediment, and practically free from the hairs which are commonly found in samples drawn by wet or greasy hands.

S. T.

#### Rabbits.

YIELD TESTING FOR ANGORA RABBITS IN GERMANY. — Yield testing of Angora rabbits was started on 1 October 1933 at Halle in premises made available by the Ministry of Agriculture of Prussia. The purpose of this official control is to establish the wool production of different individuals independently of feeding and special care on the part of the breeder, in uniform environmental conditions. The wool production is calculated in relation to the size of the animal to prevent apparent variation due only to difference in size. The period of control lasts from 1 October to 1 January, so that the animals may be returned to the owner as early as possible. It is proposed to establish later a control period of one year. (*Landwirtschaftliche Pelztierzucht*, Hanover 1933, Heft 8).

E. M.

### Agricultural Industries.

#### Industries of Plant Products

FRUIT DRYING IN URUGUAY. — In a pamphlet of 26 pages published recently by the Chair of Agricultural Industries of the Faculty of Agronomy of Montevideo, Prof. Pedro MENENDEZ LEES gives the text of a communication presented by him to the last National Horticultural Congress of Uruguay (April 1933) on the drying of fruits.

Uruguay at present imports dried fruits to a value of about 170 000 pesos annually, so that it would be in the interest of the country to facilitate the fruit drying industry, as practised in the various producing countries, and more particularly in California. As the consumption of dried fruits per head of the population is 3.350 kg annually in the United States and only 0.805 kg in Uruguay, it seems probable that the drying industry might be very successful if support from official quarters were forthcoming.

G. R.

APPLE FLOUR IN ITALY. — Until recently, says M. F. ZEGO in the *Giornale d'Agricoltura della Domenica* (Piacenza 1933, n. 29), only one apple flour was known, that called «Aplona», which was made in Germany. As Italy exports only a sixth or a fifth of her apple production annually and thus has a large surplus, consumed for the most part in the form of fruit and only a limited amount used industrially for the preparation of jams and jellies, there is an opening for the manufacture of apple flour.

This opening has been recognised by a large fruit producer of Massalombarda in the province of Ravenna, G. BORGINO, who has succeeded in obtaining a promising apple flour in the form of a yellowish powder, agreeable in appearance and aroma.

The preparation of this product begins by the thorough washing of the apples, which are then chopped finely by machine. The chopped apple is then stove-dried at a low temperature (55° on an average) and then ground. The milled product passes through several sieves, in which it is impregnated with ozone by electricity, and then is discharged in varying degrees of fineness.

According to the analysis made by Prof. E. PARINI at the University of Bologna this apple flour has the following composition, which is relatively constant :

Moisture . . . . .	6.29 %	Malic acid . . . . .	1.44 %
Dry matter . . . . .	93.71	Tannic acid . . . . .	0.45
<hr/>			
	100.00		
Pectine . . . . .	7.04 %	Reducing sugars . . . . .	42.46 %
Cellulose . . . . .	8.10	Saccharose . . . . .	7.84
		Foreign matter . . . . .	26.38

The product not only has a high food value but also important therapeutic properties. It has long been known from experience that fruits, and more particularly apples, are an excellent remedy against intestinal ailments, especially in children ; but fresh apples have the drawback of not being obtainable at all seasons of the year and are also too bulky for the young organism, whereas apple flour is always available and retains the valuable properties of the fresh fruit ; moreover it can be taken in limited and accurately measured doses, which gives it the advantages of a pharmaceutical remedy.

This apple flour is equivalent to 12-15 times its weight in fresh fruit. Not being hygroscopic it keeps well. It may be taken boiled in 10 times its own weight of sweetened water, but a more practical form in which to take it is in 3-granule tablets which are soaked for 5 to 10 minutes in any liquid preferred (hot water, tea, milk, etc.). When mixed with wheat flour, apple flour may also be used in the manufacture of biscuits.

Its therapeutic value has been tested with success by medical authorities.

T. B.

STABILITY OF WINES: ROLE OF BUFFER COLLOIDS. — Research by M. J. RIBEREAU-GAYON shows that gum arabic when added in very small amounts to wines is a very effective stabilising agent. Its action completes the stabilising effect of the natural gums which are found in wines. In a wine to which gum has been added the chemical reactions of the casse take place normally, but flocculation and consequently cloudiness do not occur. (*Comptes rendus de l'Académie des Sciences*, Paris 1933, t. 196, no. 22).

G. S.

### Industries of Animal Products

INFLUENCE OF ENSILAGE AND ROOTS ON PRODUCTION OF MILK, BUTTER AND CERTAIN TYPES OF PURE CHEESE. — In the *Annali dell'Istituto Sperimentale di Caseificio di Lodi* of 1933 (Vol. VI, n. 7-8) C. PACI describes a study of the influence of ensilage and roots on the production of milk and butter and reaches the following general conclusions :

Fodder ensilage with a water content of slightly above 50 % fed at the rate of 20 kg per day per head is readily taken and showed no adverse effects on the live weight ; mangolds, on the other hand, fed in rations of 30 to 60 kg, were not always acceptable to all the animals and therefore led to a considerable loss in live weight.



Ensilage and roots favoured the production of milk without having any appreciable effect on its organoleptic properties; the former had a favourable effect on the fat content but slightly diminished the content in dry matter; the influence of mangolds was adverse both as regards the fat and dry matter content. Further, roots and more especially ensilage showed themselves capable of altering the fermenting capacity of the milk in such a manner as in certain cases to render it totally unfit for use in certain industries. Ensilage increased the yield in butter and had little adverse effect on its physical properties, whereas roots were found to affect adversely both the yield and the organoleptic properties.

In the same number of the periodical cited, E. SAVINI describes experiments on the influence of fodder ensilage and roots on the composition of milk for the manufacture of raw cheeses. He reaches the following conclusions:

Ensilage and roots have harmful effects on the production of rapid maturing raw cheeses. Other things being equal, their harmful effect is more noticeable on raw cheeses requiring long maturation (upwards of 40 days), consequently the "Bel Paese" type is more affected than the "Crescenza" type (15 to 20 days of maturation). The action is apparent in the first place by retarding the development of the organoleptic properties such as odour and flavour, and in the second place swellings are formed, which are at first little apparent but later may increase and cause serious damage to the cheese. If insufficient care is taken in the cleaning of the premises and animals, in milking and in the rational application of the technological rules, a defective product is much more readily obtained.

From the experiments of both these writers it may be concluded that in milk production for cheese making it is impossible to recommend the exclusive or even large use of ensilage and roots in the winter ration. It is therefore advisable to depart as little as possible from the "natural" means of feeding.

E. G.

### Agricultural Training.

A MODERN HOUSEHOLD MANAGEMENT SCHOOL. — If household management instruction is to be of real use, it must be possible for it to be given in the smallest villages, which necessarily involves the possession of transportable equipment and premises.

In the *Journal d'Agriculture Pratique* (of 20 May and 3 June 1933) Henry GIRARD describes the general plan of the travelling school of household management, as established by the Chamber of Agriculture of the department of Isère (France).

The school consists of five caravans, of which four are joined, two by two, to make the classroom and the kitchen with dining room, while the fifth serves as the lodging for the teaching staff.

Each car measures 8 metres by 2.50 metres, so that the classroom has an area of 8m. by 5m. sufficient for twenty scholars. A fowl house, a rabbit hutch and a water cask are fitted up in the yard. The plant is constructed by the General Company for construction and upkeep of railway plant, at Villefranche-sur-Saône.

Lessons are given from 9 a.m. to 4 p.m. Mention should be made of the installation of central heating, of refrigerating plant, of a cinema and a wireless apparatus.

G. R.

### Agricultural Research.

NATIONAL SCHOOL OF DAIRYING AT POLIGNY (DEPARTMENT OF JURA, FRANCE). — This School, founded in 1888, serves East Central France for all matters relating to cheese production. Its budgetary expenditure includes 160,000 francs for salaries, expenses on the courses and students' board, and 725,000 francs for the farm. The

school is under the direction of M. P. SAJOUS, agricultural expert, with two qualified teachers and three dairy workers acting under him; three agents, appointed by the cheese factories, and known as «*contrôleurs des laits*» are attached to the establishment. They supervise the delivery of milk to the cheese factories to control cleanliness and prevent fraud. They also give advice on all matters relating to cheese making and the cheese industry.

The School studies more particularly problems concerning the industry in East Central France and the research is concerned with the bacteriology of cheese making, centrifugal cleaning of milk in the manufacture of Comté cheese, the blue cheese of the Upper Jura, and the manufacture of Gruyère with milk from silage-fed cows. The results of the research are published in the periodical *Le Lait*. The language preferred for correspondence is French, but German is also used.

DAIRYING STATION AND SCHOOL, SURGÈRES, CHARENTE INFÉRIEURE, FRANCE. — This School, which was founded in 1902, is directed by M. André CHOILLER, agricultural expert, who is in charge of the courses in Dairy Technology, with 1 expert assistant for practical work, 3 lecturers, etc. The Station has a chemical and a bacteriological laboratory. The work is concerned mainly with the practical and industrial control of milk, butter and its derivatives, farm production of butter, etc.

The Station publishes its results in *Le Lait* and in *L'Industrie du beurre*. French and English are the languages used in correspondence.

I. G.

## Rural Hygiene.

QUESTIONS OF RURAL HYGIENE PROPOSED FOR ENQUIRY UNDER THE AUSPICES OF THE HEALTH ORGANISATION OF THE LEAGUE OF NATIONS. — In accordance with the recommendations of the European Conference of Rural Hygiene held in 1931, the following questions have been proposed for enquiry, on the international plane:

- (1) Cost and return of the different types of rural sanitary services.
- (2) Epidemiology of typhoid fever in the rural districts.
- (3) Processes for treatment of household refuse and of manure best calculated to prevent the hatching out of flies.
- (4) Methods of analysis and testing of water supplies and of waste water in force in the different countries, and the possibility of standardising these methods.
- (5) Milk in the country districts: its production, its utilisation, its role as carrier of infection.
- (6) Curriculum and methods of instruction in schools for women health visitors and nurses.

G. R.

HOUSING AND MALARIA. — The *Bulletin trimestriel de l'Organisation d'Hygiène de la Société des Nations* (September 1933) publishes an important summary of present day knowledge of anophelism in its connection with housing and malaria. Chapter VIII is of especial interest from the point of view of agricultural hygiene, dealing with the dwelling and its surroundings — housing types — the construction — measures of protection — mechanical protection — housing in the areas of land drainage and in the land settlement regions.

The following recommendations are made:

- (1) The housing question in its connection with malaria would gain by being now divided into two quite distinct parts:

- (a) Study of the biology of the adult *Anopheles*, and in particular quantitative investigations.

(b) Study of the practical application of mechanical protection and establishment of types of wire protected houses suitable for (1) Europe and (2) hot countries.

(2) The results obtained up to the present by the adoption of mechanical protection should be grouped in a text book embodying summaries prepared in detail but with great conciseness by MISSIROU and by COVERLI.

G. R.

## Forestry.

USE OF LARCHES IN PLANTATIONS ON HEATH LANDS IN DENMARK. — M. C. DALGAS, in a contribution to *Hedeselskabets Tidsskrift* (Viborg 1932, No 9), observes that whereas the European larch (*Larix europaea*) and the Siberian larch (*L. sibirica*), when planted on heath lands in Denmark, have almost always died before reaching a height of 10 to 16 ft, the Japanese larch (*Larix leptolepis*) and also the Korean and Kurile Islands varieties appear to thrive well. It should be noted however that, though the two last named larches very closely resemble the Japanese larch, the latter as being of more bushy type in its early years is preferable for wind-swept moorlands.

Mr. DALGAS is Director of the Danish Society for the Plantation of Heathlands, and therefore had the opportunity of consulting a number of the inspectors of the Society on the subject, who supplied him with the following information on heath plantation work in North Jutland.

When after 1890 the Society largely developed its activities, the number of trees that were suitable for afforesting the North Jutland heath lands was very small. In fact only some four or five were sufficiently resistant to support the severe climate and constant wind buffetting, characteristic of this region. Most of the trees which were tried proved useless for afforestation, but one of the few, which was really serviceable, both for primary and secondary growth, was the Japanese larch, which flourished extraordinarily well and so far has remained vigorous and healthy.

The first of these larches which were planted in the «Dover Plantation» in 1911, form to-day a close set row and are of the same height (30 feet) as the neighbouring spruces planted twenty years previously, with a diameter at a height of about 6 feet of 6-7 ½ inches. Japanese larches were also used on the Sindbjerg Plantation in 1907 in an area where spruces had been blown down; these larches were to some degree protected by some young beeches and now measure over 40 feet in height and have a diameter of about 7 ½ inches.

If a comparison is made in the nursery plots between the soil under larches, rendered light and porous by the abundant fallen needles, with the hard soil to be found under the spruces, it is at once seen that the larch has a highly beneficial influence on the soil and it may therefore be considered as particularly suitable for the lower «stories» of the forest, e. g., in combination with silver fir, spruce and beech.

On the Dover Plantation area, which in 1893 had been afforested by pit planting with mountain pines from the Pyrenees, a lower story of Japanese larches, spaced at distances of about 4 ft × 6 ft, was established and they are now over 4 ft. high and growing well, whereas European and Siberian larches, planted in the same region were quite unsuccessful.

The Japanese larch is also very useful in stands of the second generation on dune lands which are not excessively dry. The Society, five years ago, established a lower story of Japanese larch, Sitka spruce, Scotch pine and lodgepole pine (*Pinus contorta*). All the two last named trees were eaten by sheep while the larches and

Sitka spruces remained intact and made excellent growth, being to-day well over 6 ft high. In making such lower storeys on dune lands afforested for a long period, it is advisable to use well grown plants 1-1 ½ feet high.

In 1927 Japanese larch was planted in the Dover Plantation as a lower storey beneath a stand of mountain pine, dating from 1899 and the larches have now reached the height of six feet. In 1916 Japanese larch was planted as a second growth under mountain pine at Store Hjlund (Silkeborg) and the trees in 1931 were already 12-15 ft. high, though the uncovered plants had died.

In conclusion DALGAS is of opinion that Japanese larch can properly be considered as suitable for the afforestation of heath and moor lands, as it has proved to be wind resistant and, when young, is helped by a certain amount of cover, so that it can conveniently be mixed with silver fir, though in this case the larch will soon require a good deal of light. It will shortly grow sufficiently tall to give the shade required by the silver fir until both trees have begun to grow freely. On soils that have been long afforested, on heath lands recently formed and on agricultural land, Japanese larch can to great advantage be mixed with beech and the trees may be planted in pure stands at distances of  $4 \times 6$  ft.

R. W.

THE PROTECTION OF WOUNDS IN TREES. — Mr. A. D. C. LE SURUR has for periods of two to five years carried out a series of practical experiments in the protection of wounds in various species of trees, caused by weather, insects and fungus spores. The results of his work have been published in the *Quarterly Journal of Forestry* (London 1932, No. 3).

The wounds can be divided into two groups, transverse wounds made by pruning branches, and longitudinal, the results of bark damage to trunk or branch.

The dressings to be applied to the wounds must, to be satisfactory, display the following qualities: (a) they must be easily applied — (b) weatherproof — (c) elastic — (d) antiseptic — (e) penetrative to a certain extent.

The materials used for purposes of protection in the experiments were the following: (1) paint — (2) varnishes — (3) tar — (4) asphalt — (5) water glass — (6) fluid bituminous compounds — (7) light preparations of the creosote type.

As regards *paint*, two seasons of experiment with ordinary oil paint and a kind known as creosote paint, showed that, except perhaps for small branch prunings, paint was found liable to crack and gape, thus tending to increase the damage, and was not merely useless but dangerous.

Three seasons trials with *varnishes* showed them also to be either useless or actually harmful.

*Tar* was tested on a large scale as being the material most frequently employed. The results were not particularly satisfactory, but showed that it should be applied hot, especially on longitudinal wounds, where absorption is particularly difficult. The degree of penetration is as a rule small and it must be kept away from the edges of the cut, as otherwise the cambium will be killed back. Its antiseptic power does not appear very considerable.

*Asphalt*, which, when heated, is semi-liquid and contains a considerable amount of bitumen, is sometimes recommended by British authorities as a wound dressing and is much used in the United States. It is rather difficult to use as it has to be heated and kept hot while employed.

Experiments showed that it is waterproof but not frost proof, and for filling holes or deep wounds of considerable size not too near the ground or exposed to motion,

it proved fairly satisfactory. It however requires very careful handling, as it must be used in a very liquid state, i. e., very hot indeed.

« *Water glass* » is the name given to a silicious fluid largely used in egg preservation. On large surfaces it seems generally to flake and powder away, but on small cuts it has lasted three years and for such or for fruit trees, it seems to be a fairly satisfactory and cheap method of temporary water proofing. It has also been used successfully on new cuts to prevent the « drying » of the cambium.

Fluid and semi-fluid *bituminous compounds* are generally mixtures of bitumen and asbestos. One of them, known as « *Rufmat* » and put on the market by the « *Country Gentlemen's Association* » in a liquid or plastic form, was given a five years trial. It was found to be quite satisfactory as regards ease of application, elasticity and resistance to weather and frost, and was successfully used on deep wounds over six feet in length, which had defied all other kinds of treatment. It was also valuable as a covering for the exposed surfaces of topped trees, but should only be applied when the timber has dried out. On vertical surfaces liquid *Rufmat* should be used in at least two thick coatings.

*Fluids of the creosote type* are mainly preservative in character and their action is chemical rather than mechanical. Experiments showed that they all had marked penetrative power and protected the wood against fungus attack. These fluids fulfil conditions (a), (d) and (e) above.

In conclusion the writer states that in bituminous compounds of the « *Rufmat* » order, there is available a product, easily applied, strongly adhesive, elastic and water proof but non-aseptic and non-penetrative. On the other hand in the light creosote fluids we have a material definitely antiseptic in character but not permanently water-proof. He therefore recommends a combination of the two types, i. e., a preliminary dressing with a creosote fluid, followed, after the surface appears fairly dry, by a further creosote dressing and an over all application of « *Rufmat* » or of some similar substance.

R. W.

MODERN SYSTEM OF METALLIC JOINTS IN WOOD CONSTRUCTION. — According to Mr Axel OXHOLM, writing in the *American Forests* (Washington D. C., April 1933), in consequence of the increasing use of other and cheaper materials, the consumption of timber per inhabitant of United States has now become too small for forestry to be any longer profitable, as it is obviously not to the interest of owners to develop their properties, if there is an insufficient market for forest products. The writer is however of opinion that the modern system of using metal connectors in wood construction, which he saw for the first time during the War, whereby it is possible to build large wooden structures at a low price, might revolutionise present condition. The system consists in the utilisation of metal rings fitted into grooves in two wooden members to be joined and held together by bolts.

Since 1920 the writer visited in many of the countries of Europe the inventors of these connector systems and also the construction houses by which they are used and he brought back to the United States, where the method is at present unknown and timber construction work was beginning to fall into disuse, upwards of sixty different types, together with much illustrative material. This consisted of photographs of modern towers up to 525 feet in height for radio-telegraphy as well as buildings, hangars for aeroplanes, etc. on a large scale.

The Forest Products Laboratory at Madison, Wisconsin, belonging to the Forestry Service of the United States, undertook to make trials of the principal types of these

connectors for use in wood construction, while at the same time the Bureau of Standards of the United States Department of Commerce made metallographic tests of the metals employed. A report, containing the results of these experiments, was published by the National Committee on Wood Utilisation under the title of «Modern Connectors for Timber Construction». This report brings out the numerous advantages of these modern jointing systems and fully recognises that they have proved both effective and economical in hundreds of structures that have been built in Europe in recent years.

The American timber industry is fully alive to the possibilities of this new construction method and the National Lumber Manufacturers' Association has already organised an engineering service for putting the system into immediate operation. The interest, aroused among engineers, builders, architects, designers and manufacturers in the United States by the report on the results obtained by the Forest Products Laboratory, has been so great that within a few weeks of publication, no less than 65,000 copies were ordered by those concerned.

R. W.

### BOOK NOTICES \*.

KOENIG P. und ZELLE A., *Die Weltwirtschaft der Baumwolle*, IX + 180 p. Berlin 1933, Verlag von Julius Springer.

This volume forms one of a series of works entitled *Technologie der Textilfasern*, edited by Professor R. D. HERZOG, Director of the Institute of Fibre Chemistry at Berlin.

The writers give an excellent general account of cotton growing in world economics, of the cotton trade and of the numerous industries utilising cotton. A study of the work shows clearly that one of the writers, Dr. KOENIG, knows all that is to be known about the practical side of cotton growing; he was, in fact, before the war Director of the Experiment Station of Bahim, Cairo, and was later appointed to found a new Experiment Station at Adana in Turkey.

In Chapter I are discussed the questions of the world requirements in cotton, production, prices, the world trade, and also the production of and trade in cotton thread and fabrics.

Chapter II deals with the culture, ginning and warehousing of cotton and the commercial methods. The remaining chapters contain short studies of the principal countries producing cotton and cotton manufactured products.

The statistical data are very complete and up-to-date. But it is more particularly the interesting information concerning the details of culture and trade which make this book of value to all those interested in cotton. It is in many points supplementary to the volume on the botany and culture of cotton, by Professor WITTMACK, which appeared in 1928 in the same series.

W. B.

\* Under this heading are included short synopses of books received for review.

## PUBLICATIONS RECEIVED BY THE LIBRARY

### Books.

#### *General.*

LANDTBRUKSVECKANS STYRELSE, STOCKHOLM. Handlingar till Landtbruksveckan. År 1933. Stockholm, A.-B. Nordiska Bokhandeln, [1933]. 350 p.  
[Acts of the Agricultural Week in Sweden.]

POMMERN. LANDWIRTSCHAFTSKAMMER. Jahresbericht 1931/32 der Landwirtschaftskammer für die Provinz Pommern. Stettin [1932]. 230 p. [Miméogr.]

SVENSKA LANTBRUKSSÄLLSKAPENS I FINLAND FÖRBUND, HELSINGFORS. Redogörelse över Svenska lantbrukssällskapens i Finland förbunds verksamhet under år 1932. (Förbundets 22 : dra verksamhetsår). Åbo, Åbo Tryckeri och Tidnings A.-B., 1933. 28 p. (Svenska Lantbrukssällskapens i Finland Förbund, no. 80.)  
[Report on the activity of the Association of the Swedish agricultural societies in Finland.]

#### *General Agronomy.*

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

### EDITORIAL

#### Protection of Forests and Crops against Wind Damage.

The publication by the Forestry Section of this Institute of the results of an enquiry begun in 1927 to determine the means of defence against wind damage, is an important contribution to the study of this question which is of vital concern to all farmers.

The replies received to the questionnaire sent by the Institute to the various countries have been arranged in a very clear manner by Dr. G. LUNCZ in the 264 pages of the work. After giving particulars of the importance of the damage caused by wind to forests and to the various crops and of the periods in which there is most risk of wind damage the author studies in detail the most effective methods of protection against wind. All matters concerning the formation, maintenance and effect of wind-breaks are systematically discussed. A chapter on the legislation in force in the various countries and a list of bibliographical references complete the work.

It is reassuring to find that the foresighted farmer is by no means defenceless against the destruction caused by wind. But it is necessary to realise that an effective defence requires time and patience and a thorough study of the subject.

Prof. Georges RAY.

### ORIGINAL ARTICLES

#### “Monoculture”, or Single Crop Farming, in Rio de la Plata.

##### I. — INTRODUCTION.

“Monoculture”, or the growing of a single crop as opposed to rotation cropping, is a system of farming practised in the thinly populated regions of non-intensive agriculture and in certain regions where special circumstances of climate, land or markets necessitate the single crop. Particular interest attaches to the examples of monoculture characteristic of the present day non-intensive agriculture that has been enabled by machine methods to sweep under the plough whole regions formerly waste and adapt them to grain production. This development has been remarkably rapid, almost precipitate, so to speak, since monoculture and the combine have together carried agriculture into the

vast plains which were formerly given up almost exclusively to range grazing, which in its turn is a kind of monoculture still characteristic of the steppes of Europe and Asia and the South American pampas. The seemingly inexhaustible productivity of the humus-rich soils of great natural fertility in a number of cases gave abundant crops at first and still good ones in the following years.

This system of soil-impoverishing farming, making no use of fertilisers and often growing the same crop year after year, is a case of monoculture which is of especial interest. There is no doubt that the fact of the very low average yields obtained in the countries where this system predominates alone demands a careful study of the question. The rapid diminution in fertility which in many cases shows all the characteristics [of an exhaustion of the productivity of the virgin soils submitted to monoculture is more widespread and marked than is generally realised. While, on the other hand, lucrative yields are obtained year by year, even in less favourable climates where rotation cropping with its attendant tillage operations is practised, and the highest yields are reached in certain cases of intensive mixed farming.

The interest of this subject is accentuated in view of the unprecedented effort of the Soviet Union which aims at the complete mechanisation of farming, to the point of speaking of veritable "wheat factories". The "collective farming" established by the U. S. S. R. as their highest aim has undoubtedly by the use of the modern power farming equipment been able to bring under the plough the formerly inaccessible virgin soil of the immense semi-arid steppes. There exist, however, some doubts regarding the final result of this vast agricultural scheme, doubts based partly on the questionable practicability of monoculture, which is a system of farming attended by double risks when applied on so vast a scale. The accounts of R. HICKMANN PRICE, who as official guest of the Soviet Union was in a position to know at first hand the first results of this agricultural effort which formed a vital part of the Five Year Plan, already tend to confirm these doubts. There can be no doubt that the defects of monoculture such as this will become plainly manifest after a longer period of the more or less one-sided exploitation of the soil. As regards the immense steppes of Russia, which are known to be the most extensive regions of the world essentially suited to extensive agriculture, it would be relatively easy to reduce the risks of an excessive monoculture. These same wheat factories, acting as a kind of movable farm on a huge scale, could benefit from a regeneration of the productive forces of an exhausted soil by moving into other regions of the immense virgin steppes, thus acquiring a sort of rotation of crops adapted to the particular conditions of these regions.

Monoculture as applied to some of the vast plains which have recently been transformed from zones of grazing into immense granaries for the world market, as in North America, Russia, Australia and Rio de la Plata, will be of still greater interest when pure lines have been formed and sown on a wide scale. The "pure line", a biological entity established in 1906 by JOHANNSEN, signifies the total progeny of a single homozygous individual resulting from strict self-pollination. Among the crop plants of the regions of extensive monoculture several are characterised by self-pollination, namely, wheat, oats, bar-

ley, and flax for oil production. Although there is no strict self-pollination in any of the staple crop plants which are normally self-pollinated, vast areas are now planted with practically pure lines in order to extend the application of plant genetics into nearly all the agricultural centres of the world. The practical requirements as to homogeneity of a farm crop of any given pure line may be readily satisfied if a competent plant breeder continually supervises seed production so as to keep the strain "practically pure".

It is of interest on the other hand to consider that the pure line also may represent the final product of certain natural or induced crosses. Even in the simplest cases of a hybridisation in which disjunction obeys the Mendelian laws, already in the  $F_2$  generation 50 % of homozygous combinations or "pure lines" is obtained. By supposing strict self-pollination, a free combination of the factors and an equal coefficient of reproduction for all the combinations, the proportion of homozygous combinations in the following generations may be mathematically calculated. Without entering into details, it may be said that for a hybridisation based on 20 hereditary factors capable of segregation a period of 10 years is sufficient to obtain a purity satisfying the requirements of cultural practice.

The result is that in cases of hybridisation in which the biological analysis presents no unusual complications it is permissible to expect in the respective progeny a greater purity than is usually supposed, and it is not excessive to regard them as practically pure after a trial period of 10 years of continuous individual selection.

It is a fact that the local varieties of former days consisting of populations generally well adapted to their respective environments as a result of Darwinian natural selection, are being increasingly replaced by «pure» strains. In the vegetable kingdom there is also noticeable an appreciable and progressive reduction in the number of plants utilised for cultivation. This constitutes an interesting parallel with the similar situation in the animal kingdom in which there is observable a rapid diffusion of a comparatively small number of pure bred breeds which are tending to replace the former local breeds to an ever increasing extent. It is with a surprising rapidity that in recent years certain breeds of high value as stock animals have become diffused from their places of origin till they have reached new countries and even continents, as is the case with the Durham, Hereford, Holstein-Frisian cattle, Merino sheep, the Berkshire pig, etc.

Owing to the improvement in quality and quantity of production the immense uniform crops of homogeneous varieties of cereals usually mean a positive gain for agriculture. But, without doubt, in relation to the problem of monoculture this very uniformity of type may become a danger owing to the possibilities of loss caused by the specific parasites of a given pure line. The importance of symbiosis and parasitism on plant life and therefore on the final production of crop plants, is an indisputable fact in all branches of crop production. It is because this is taken into account in forestry that a mixed plantation is usually preferred to that of a single tree, thereby reducing the dangers of loss from fungal and insect attack.

Similarly the uniformity and genetic purity of the crops transform a plantation of cereals into an ideal nutritive medium for the almost instantaneous spread of such pathogenic organisms as are to be feared in the given environmental conditions. For example *Puccinia glumarum*, the presence of which was recorded in Rio de la Plata for the first time in 1929, was able to spread with such rapidity and cause such serious loss because it found in the vast crops of Record wheat in Argentina and of Artigas wheat in Uruguay a suitable host, and these varieties offered only a feeble resistance to the attacks of this disease formerly unknown in either country. As this fungus had not been present it had not been possible to take preventive measures by selecting for resistant varieties, as have been formed since the outbreak of this formidable rust.

It is readily understood also that the increasing diffusion of the «pure» host plant is favourable to the existing parasites since they meet with greater possibilities of development. The adaptation of the parasitic microfauna to given pure varieties of wheat grown on wellnigh boundless areas of monoculture increases to an appreciable extent the danger of more or less heavy losses. The diminution in production caused by a one-sided exploitation of the land may reach especially large proportions in cases of pure cultures attacked by disease, which is a fact worth considering in any study relating to monoculture.

The mention of these special cases of risks attributable to monoculture raises the question of soil exhaustion, a problem as old as agriculture itself. The exhaustion of the productivity of the soil and the enfeeblement of the vegetative energy of the plants are closely related to the problem of crop rotation. In the case of a more or less marked diminution in production caused by the continuous cultivation of the same plant, theoretically, and always in the case of soils of adequate natural fertility, a change of crop constitutes the first means of defence. There is no doubt however that the cases occurring in present day agricultural practice are not so simple and are still less simple in countries in which manuring is a general practice.

From a chemical point of view not only are there differential requirements of crop plants in relation to the various nutritive elements, but also there is their differing influence on the soil as a medium for consecutive cropping. From a physical point of view the influences of different crops are as well known on the physical structure of the soil as on its content in moisture. Finally from a biological point of view there exist inter-relationships and mutual influences between the plants cultivated and the other macroscopic and microscopic organisms.

The essential and characteristic feature for each of these three groups of factors in relation to the problems of crop rotation and soil fatigue is the existence of a veritable "specialisation" of the various plants in regard to the after-results of their cultivation. This specialisation comprises a differential consumption of the nutritive elements, as well as the influence on soil factors and the biological forces influencing plant production. Any text book on agronomy furnishes information on these most important aspects of this preliminary chapter of the study of rotation. For the case in point it is necessary to refer only to a certain number of details in close relation with the subject of the writer's work.

When considering this specialisation of plants it is not sufficient to speak simply of a fatigue of the soil itself. This conception lacks clearness and accuracy if it is not related to a given crop. It is necessary always to distinguish between a diminution in production caused by the slow reduction of the nutritive substances contained in the soil and the physical influences, etc., so as to be able to isolate the factors causing the fatigue properly so called. In spite of this simplification of the problem not all cases of fatigue of the soil or of the respective plants have yet found their final explanation. It is known that the specific fatigue of sugar beet (*Beta vulgaris*) is caused by insects attacking the roots. It was also easy to establish that it was the increasing diffusion of the insect *Anthonomus grandis* which prevented the permanent monoculture of cotton (*Gossypium hirsutum*) over vast regions of the United States, making it necessary to reduce the acreage under cotton and to adopt a rotation of crops. But it is not possible to give a final and conclusive explanation with regard to the fatigue of clover (*Trifolium pratense*), of peas (*Pisum sativum*) or of other plants, particularly of flax (*Linum usitatissimum*), which is of particular interest for the purposes of this article.

The formerly very widely held opinion that the fatigue of flax is caused by a decrease in the fertilising principles of the soil can no longer be supported in view of the contrary results obtained by several scientists who have made a special study of the matter. The application neither of inorganic fertilisers nor of manure is able to remove the soil fatigue produced by continuous cultivation of flax. At La Estanzuela we have confirmed the above results in our experiments on rotation cropping, and in our book entitled *Observaciones sobre Agricultura\** (p. 158) we arrived at the conclusion that it necessary "to rectify the erroneous opinion that flax is an impoverishing crop". Other important works on the theory of the secretion of toxic substances by the plant cultivated (one of the numerous theories suggested to explain the fatigue of crops) have been cited by SCHILLING on p. 136 of his monograph on flax published in 1928 in collaboration with TOBLER and others scientists: *Der Flachs als Faser und Oelpflanze* (Berlin, Verlag von J. Springer). The results of these researches on the toxin produced by the roots of flax, on soil acidity, etc, are contradictory and this aspect of the problem is consequently not yet cleared up.

The group of researches mentioned above aiming at determining the causes of flax fatigue due to chemical and physical factors is completed by the group of biological studies of the problem. BOLLEY and his school (North America) attribute the wilt-disease of flax to *Fusarium Lini* Bolley. KLETCHETOV in a Russian monograph on the biological causes of flax fatigue published in 1925 attributes the causes of the phenomenon to some of the parasitic fungi found in the these affected crops. In North America, England, Germany and Russia several of fungi have been found, among which may be specified *Fusarium Lini* Bolley, *Colletotrichum linicolum*, *Gleosporium* and *Polyspora Lini*. In Rio de la Plata have been recorded *Melampsora Lini*, *Plyctaena linicola* and *Fusarium Lini* Bolley. In some plots planted with flax in 9 consecutive years at the

\* BOERGER Alberto, *Observaciones sobre Agricultura*. Montevideo 1928, Ministerio de Industrias.

Experimental Field of Moscow KLETCHETOV found "a whole army" of parasites, each of which alone or in quite small number would be sufficient seriously to endanger the crop.

SCHILLING, after having in the monograph cited given details and indications regarding the present state of researches on flax fatigue, arrives at the conclusion that there is not yet any complete and final explanation of this phytopathological and cultural phenomenon, and the account given in the preceding pages endeavours to give a general account of the present state of the researches on the subject as an introduction to the second part of the article in which will be described the results of prolonged monoculture carried out at La Estanzuela with a view to obtaining data on the agronomic and cultural aspects in the special conditions of Rio de la Plata. Part 3 will deal with cases of monoculture of cereals which have for a number of years been submitted to comparative study in our rotation experiments.

## II. — EXPERIMENTAL MONOCULTURE OF FLAX AT LA ESTANZUELA.

Since the war Rio de la Plata has occupied the first rank among the flax producing countries of the world. In a previous work entitled "Leisaat und Flachs am La Plata" (*Faserforschung* III, 2, Leipzig 1923), I gave a statistical table of the world production of flax as an oil yielding plant and a textile plant. Utilising the copious statistical material supplied by the International Institute of Agriculture of Rome I compared the average pre-war values (1909 to 1913) with those of the post-war production (1919 to 1921) and added at the same time data on the utilisation of flax for oil. Argentina and Uruguay before the war planted 1 671 625 hectares with flax and produced 814 560 tons of seed, equivalent to 29 % of the world crop. The average production from 1919-20 and 1921-22 reached 1 075 275 tons, that is to say 51 % of the world crop.

There is no doubt that the importance of Rio de la Plata in the world production of flax may be accurately estimated from the part it plays in satisfying the requirements of the world market. With 707 865 tons as the mean value of the exports from 1909 to 1913 and 1 161 400 tons in 1919 to 1921, Rio de la Plata furnished respectively 42 and 72 % of the total exports of flax, which figures prove conclusively the importance of Argentina (the importance of Uruguay is insignificant) in the international trade in this product. This dominating position has been still further increased and in 1928 Rio de la Plata with an export of 2 144 800 tons approximately reached the 2 310 000 tons of the world exports. The total of 3 105 000 hectares cultivated in flax reached by Rio de la Plata in 1930-31 is nearly double the area from 1909-1913. The importance of flax growing in Rio de la Plata may be realised from the fact that it supplied 85.1 % out of the total of 2 019 775 tons which was the average world export from 1927 to 1930.

Amongst the cultivation methods used to obtain such a high production of linseed, its culture as a "pioneer-crop" plays an important part. Although the immense extent of the apparently limitless plains of the Plate have the aspect of a monoculture in the etymological sense of the word, it is not however a method

contrary to the technical principle of crop rotation. There is no doubt that by reason of the extensive character of the agriculture of the country, with its tendency to adapt its scheme of cropping to the situation in the world market of the different agricultural products, flax, in consequence of the disastrous fall in the prices of the wheat, constitutes a desirable crop and has therefore invaded also the land formerly cultivated with other crops of less certain value. And it is a fact that the writer of this article in his capacity as Director of the Instituto Fitotécnico y Semillero Nacional del Uruguay was frequently consulted with regard to the prospects of continuous culture of flax on the same soil. And the resistance observed in Argentina in certain varieties of flax (Malabrigo, Reconquista, San Martin) to repeated culture in the same soil has still further shown the necessity for a thorough study of the question.

It was in view of these circumstances that we undertook ten years ago at La Estanzuela exhaustive studies on the resistance of different varieties of flax to continuous culture. The first results obtained were published in my work "*Observaciones sobre agricultura*" (p. 492 to 495) and in the periodical *Faserforschung* (VII, 3, Leipzig 1929), under the title "*Selbstverträglicher La Plata Flachs*", a contribution to the study of flax fatigue. This was an extreme case of monoculture of flax submitted to systematic continuous cultivation. It was possible by this means systematically to throw light upon the agronomic and cultural aspects of the problem, without prejudice to the supplementary edaphic, phytopathological, etc., observations.

The indisputable fact that the various varieties of flax differ considerably one from the other as regards their degree of resistance to continuous culture is of theoretical interest and of practical importance for the agricultural zone of Uruguay. It was with a view to confirming by experiment certain indications contained in the literature of the country, based on empirical observations of agricultural practice, that these systematic trials of continuous culture of flax were undertaken at La Estanzuela. Even in 1923-24, at the beginning of these trials, it was possible to obtain highly interesting preliminary data. The experiment was carried out on land sown uniformly the previous year with a single variety of flax. Out of a total of 22 varieties and genetic strains two failed almost completely, five gave a yield below that of the controls (genetic strain susceptible to the effects of repeated culture) and the 15 last varieties were found in the experiments to be resistant. Amongst these, 6 belong to the variety Malabrigo and by their morphological and physiological homogeneity made it seem that they had a common origin; they supplied the necessary material for our selection trials with a view to obtaining a variety of flax which could be grown in continuous culture and thus adapted to the conditions of Uruguay. Further details of this initial experiment may be found in the publications cited.

The experiments of the following year (1924-25) were amplified by the addition of other varieties of flax of European and Argentine origin, and amongst the latter three varieties of San Martin flax, a type resembling the Malabrigo variety and also considered to be resistant to continuous cropping. As in the preceding year well marked differences were observed in the pathological phenomena and in the extreme cases this time there was total destruction of certain

plots as a result of the wilting of plants at different stages of development. In consequence of very pronounced irregularities in the soil which cast doubt upon the numerical data the project of making quantitative determinations was abandoned.

When these irregularities had been eliminated numerical data were obtained for the 1926-27 crop, that is to say for the fourth year of consecutive culture on the same land. Two mixtures of different types of Malabrigo flax on a total of 32 comparative plots gave a very satisfactory yield: 1010 and 970 kg. of seed per hectare respectively. The plants of the three genetic strains of "non continuous cropping" flax in the same conditions had totally disappeared and their production was nil. A very bad result was also obtained with another variety, La Estanzuela 12 c 12, the production of which was 430 kg. of seed per hectare.

In the two following years the adverse effects of repeated culture were still more marked and affected even the flaxes which had hitherto remained resistant. In 1928-29, the year in which the experiments comprised 33 different classes of flax amongst which were some recently introduced European varieties, the yield of all the varieties studied was practically nil. The differences in the degree of resistance to consecutive cultivation were determined by estimating the state of the crops during the flowering period in accordance with the grades: 1 = very good; 10 = very bad. It is interesting to note that out of the total of the 33 varieties submitted to the experiment 12 were classed below ten. None of the varieties studied was placed in the grade "very good" and only three, amongst which were two genetic strains separated from the mixture called Malabrigo, reached the grade 3.

In the experiments of the year 1929-30 the results were similar to those of 1928-29, but some varieties gave a better result, namely 300-400 kg. per hectare. The yield of the non-continuous cropping varieties was on the other hand practically nil. The year 1930-31 is outstanding as being very favourable to flax production in the region owing to the favourable effects of the spring rains, which were abundant and well distributed. In these circumstances the favourable reaction of certain continuous cropping varieties still further increased and among those studied a maximum yield of upwards of 1000 kg. per hectare was obtained. In similar cultural conditions the non-continuous cropping varieties gave unit yields practically nil or so low that in the general farm practice it was not worth while to harvest the few seeds produced.

The most recent observations, being limited to the uniform culture of a single continuous cropping variety in a soil affected with flax fatigue, gave the impression of a certain spontaneous regeneration produced in the soil itself. If this fact is confirmed in the following years it will constitute a similar case to that already cited in the literature. For the moment it would be unwise to found any conclusion on these results. In 1931-32, with a single variety sown at three different times, the yields in seed, affected also by meteorological factors, varied between 230 and 340 kg per hectare. In 1932-33 a yield of 160 kg per hectare was obtained, which is fairly good for a soil submitted since 1922-23 to such an experiment in excessive monoculture. This yield was re-



markable in comparison with the very low average of the general flax production of that year.

Although the "Instituto Fitotecnico y Semillero Nacional La Estanzuela" by using these varieties resistant to continuous cropping has succeeded in producing by continuous individual selection a type of continuous cropping flax which is very widely grown in the country, this resistance must however be considered as relative. Even by using seed of a continuous cropping variety it would be risky to leave out of account the rules of the technique of crop rotation, even on virgin soils which are not subject to exhaustion of the nutritive substances. The writer suggests three years as a prudent limit for the consecutive repetition of flax culture, although the literature on the subject cites the case of "permanent" crops of flax in the Oetzal in the Tyrol, which however is noted as exceptional. All the same, the very fact that well marked differences of resistance in certain indigenous flax varieties when submitted to consecutive cropping have been observed merits the attention of those concerned in flax growing. With regard to the encouraging and important result of having obtained continuous cropping varieties suited to the conditions of the country, further study of the question in other flax growing regions is necessary before the results can be admitted as of general application.

### III. — MONOCULTURE OF CEREALS AND ROTATION EXPERIMENTS AT LA ESTANZUELA.

The grain growing of Rio de la Plata while being definitely extensive retains the aspect of the primitive farms which lack systematic rotation and, though varying in different cases, are obliged in principle to comply with the general requirements imposed by the agricultural conditions of any given region. The lack of an appropriate rotation system is thus considered one of the main causes of the check in the development of agriculture in the zones devoted to one or other of the different systems of prolonged monoculture. Scarcely fifty years ago, at the beginning of the exceptional expansion of agriculture in the country and of the rapid spread and progress of mechanisation (reaper-binder, combine), it was a question only of producing wheat and still more wheat. This was the beginning of the slow formation of a zone devoted preferably to wheat growing; there followed later similar zones devoted to the cultivation of maize, flax, etc. although it would be an exaggeration to speak of the various crops being grown to the absolute exclusion of others in their respective zones.

It is evident that in these circumstances there were monocultures which were extreme either in extent or in cultivation that was continuous or interrupted only for brief periods. It was only after a number of consecutive poor crops of wheat or flax that it was decided to change the crop grown to maize or some other cereal more or less suited to the zone in question or to leave the land to "rest" in extreme cases. It is not too much to say that this rest when the exhausted land is to be used for stock breeding, especially by growing a fodder crop as restorative as lucerne, constitutes a perfect method of farming and in the case of lucerne ideal from an agronomic and cultural point of view.

The cases of a more or less prolonged monoculture were so frequent that even the fertile lands of Rio de la Plata were not long able to withstand the harmful effects of this impoverishing exploitation. On every side the number of zones affected by the consequences of monoculture increased and cases were not lacking of a definite destruction of the arable soil as a result of repetition of the same crops. It is certain that the slow increase of parasitic insects on special host plants constitutes by itself a danger, which is latent and therefore less appreciable to farmers, who remain unaware of its seriousness until the moment when the rapid spread of the parasite has destroyed their crops. It is easier on the other hand to observe the subsequent spread of weeds, which is an inevitable consequence of monoculture and accompanied by an equally inevitable reduction in the crop.

For Uruguay, which is a newer country than Argentina, all the inconveniences and dangers of monoculture have a still greater importance owing to the progressive subdivision of the property, particularly in the farming zone in the south of the country. All these considerations led the writer of this article from the beginning of his professional activities in Uruguay (1912) to devote particular interest to the problem of crop rotation. This interest, which was theoretical in the beginning, soon gave place to experiments, which gave results of great value for agriculture in Uruguay and of increasing importance also from a scientific standpoint.

A whole chapter of my previously mentioned work, *Observaciones sobre Agricultura*, is devoted to the problem of rotation. In addition to an account of the general organisation of crop rotations practised at La Estanzuela, the main details of the experiments and their results up to the year 1926-27 will be found there. The following table (p. 507) concerning monoculture of cereals as compared with the same crops in rotation constitutes a summary of this rotation experiment. Although the figures obtained in this "extensive" experiment, as I call it on page 146 of my book, have not the same force as proof given by tests carried out with all the experimental equipment and technique of the present day, they represent in their total data of very great value in consequence of the long duration of the trials. The repetition of observations for such a number of years with results always tending in the same direction, although with differences in degree of intensity, constitutes a decisive factor in this class of experiments. As much may be said for the conclusions drawn from them.

The execution of the rotation experiment since its initiation (1917-18) until the present day has been under the direction of my collaborator Ing. Agr. Antonio Gorz, Sub-Director of the "Semillero" (nursery). I should like to repeat here my full recognition of his painstaking and conscientious collaboration, as already expressed in my work *Observaciones sobre Agricultura* at the time of the publication of the experimental results obtained up till 1926-27.

In addition to the advisability mentioned above of consulting the preliminary explanations of the experiments contained in my book, with a view to understanding certain details regarding the causes of yields as low as those appearing in the table, I note here also the loss of the wheat crop for the year 1922-23 as a factor detracting from the final values of the production obtained.

There are also lacking the figures relating to 1928-29 for all the maize plots, the sowing of which was purposely omitted for purposes of the effective control of weeds, the excessive invasion of which required that year active measures of control in order not to endanger the continuation of the experiment. The fact of having applied this means of control to all the maize plots does not alter the structure of the experiment and the figures, both absolute and relative, concerning maize (this cereal figuring as the third experimental group in the table) remain entirely comparable with the others.

*Monoculture of cereals as compared with the same crops in rotation.*  
(Summary of the "La Estanzuela" rotation experiment from 1917-18 to 1931-32).

Nº	Monoculture	Rotation of crops	Yields			
			Absolute (in quintals per hect.)		Relative (in %)	
			1917-18 1926-27	1917-18 1931-32	1917-18 1926-27	1917-18 1931-32
1	Permanent wheat . . . . .	Wheat every 3 years after maize . . . . .	4.0	6.1	100	100
2		Wheat every 2 years after barley . . . . .	8.7	10.3	177	169
3		Wheat every 2 years after flax . . . . .	5.0	7.8	114	128
4		Wheat alternately with maize . . . . .	7.0	9.6	155	157
5		Wheat every 3 years after fallow . . . . .	8.1	9.2	105	151
6		Wheat every 3 years after flax and oats . . . . .	9.0	10.9	183	179
7			8.8	10.2	179	167
8	Permanent oats . . . . .	Oats every 7 years after wheat . . . . .	7.5	8.3	100	100
9		Oats every 6 years after maize . . . . .	8.1	9.4	108	113
10			9.2	10.5	123	127
11	Permanent maize * . . . . .	Maize every 7 years after oats . . . . .	12.1	11.5	100	100
12		Maize alternately with wheat . . . . .	13.2	15.3	109	133
13		Maize every 2 years after wheat (method IV) . . . . .	12.6	13.8	104	120
14		Maize every 3 years after wheat (method V) . . . . .	13.3	14.6	110	127
15			13.3	15.0	110	131

\* The figures relating to the maize crop for the year 1928-29 are lacking.

In following down the columns of the table very interesting figures are observed with regard to the prejudicial effect of the three monocultures of cereals

studied. The yields of maize, absolute as well as relative, indicate not only the defects of the principle of monoculture, but also the rapidity with which a reduction in crop is produced. Although maize is a restorative crop for other cereals and its frequent repetition on the same land would seem attended by less risk than is the case with other crop plants, maize is seen to be more susceptible to continuous cultivation than the results obtained up to 1926-27 would suggest. This fact seems to the writer of so great interest that it is proposed to quote in full the conclusions relating to 1927 :

“ In the cases observed maize behaved as a crop which we will describe as “ independent ”, acting up to its character as an indigenous cereal of America. Owing to the results observed in the cases in which wheat failed, maize may be considered as a definitely soil restoring crop, developing to a surprising extent its productive power and consequently its favourable influence on the following crop. In all the cases observed maize gave practically equal average yields without showing any effect from the preceding crop, which leads me to describe it as “ independent ”. It would however be an exaggeration to state that this crop can support permanent repetition without risk of succumbing to the adverse influences of a one-sided exploitation of the soil, which is confirmed in practice by the unfavourable year 1926-27. The plot of “ permanent maize ” gave in consequence of the persistent drought only 4.7 quintals per hectare, as compared with a yield of more than double with the rotation systems, and the same time of planting and the same cultural methods ”.

The falling off of the crop in the continuously grown maize soon became very noticeably apparent. Unlike the other cereals studied, the absolute yield of which in cases of permanent culture continued to improve, the monoculture of maize gave an average yield noticeably lower for the period 1917-18 to 1931-32. This falling off in the productive vigour of the maize had as consequence a marked accentuation of the differences in the relative yields, for in the cases of maize grown in rotation, unlike those of monoculture, there was a slight increase in the absolute yields. It results that maize as regards the relative yields differs distinctly from wheat and oats, which retained a certain parallelism in the two periods considered.

A study of the figures relating to the yields of wheat and oats reveals immediately the surprising fact that the absolute yields of the later years are higher than the earlier ones, which fact is in apparent contradiction of the falling-off in yield which would naturally be expected, particularly in cases of permanent cropping. The excessively low yields of the period 1917-1918 to 1926-1927, in consequence of the special circumstances mentioned in the chapter previously quoted from my book, made it necessary to take measures to increase them, namely by giving special attention to the preparation of the ground, choosing the most suitable time for planting and the most suitable varieties of wheat. The desired result was not slow to appear and the crops in general were better. I emphasize the words “ crops in general ” because all the plots without distinction were subject to the favourable influence of the treatment, which had no disturbing effect on the general purposes of the experiment. The above mentioned parallelism between the relative yields of the two periods

considered supplies the practical confirmation of the preceding explanation. And this parallelism very clearly shows the inferiority of monoculture of wheat and oats as compared with the rotation studied as likely to be adapted to Rio de la Plata. It is understood that wheat, not only as the most important grain crop but also as the most important crop of Rio, was studied more thoroughly than the other cereals grown in the country.

As regards the other cereals, oats is now worthy of attention as a valuable fodder crop for winter grazing in direct relation with monoculture. In Uruguay, as also in Argentina, in view of the difficulty of growing lucerne, in many cases the continuous cultivation of fodder oats is justifiable for stock farmers interested in the production of winter fodder. It is therefore of interest and practical importance that oats is a plant not very susceptible to repeated cultivation on the same land. It is understood that even this case of monoculture is always relative, for the accumulation of the specific enemies of the oats represents a continual danger, as for any monoculture. The case of oats will present new aspects in the future, as has occurred with maize during the relatively short period from 1926-1927 to 1931-32.

#### IV. - SUMMARY AND CONCLUSIONS.

(1) The varieties of crop plants called previously "local varieties", forming populations adapted to their respective environments by Darwinian natural selection, are gradually being reduced in number as a result of the systematic selection of the present day and are finally becoming replaced by a small number of "pure lines" grown over vast zones.

(2) The monoculture of the staple crop plants which is practised in some of the vast agricultural plains of the world is thus even more pronounced owing to the widespread cultivation of these pure lines repeated on the same soil, as is the case in Rio de la Plata.

(3) Although the immense uniform crops of this class of homogeneous varieties of cereals, etc., seem at first sight a definite gain for present day agriculture, they may however in certain circumstances become an adverse factor owing to the greater possibilities of loss caused by the specific enemies of a given pure line. A practical example of this is given by the losses caused by *Puccinia glumarum*, a serious fungus which was unknown in Rio de la Plata until 1929, in which year the losses reached such great proportions in the wheat areas of the country because of the ideal medium that the immense homogeneous cultures of certain particularly susceptible varieties of wheat offered to the instantaneous spread of the fungus.

(4) In addition to these catastrophic losses in these cases of excessive monoculture, the slow weakening of the vegetative vigour as a result of the one-sided exploitation of the soil must be taken into account.

(5) The problem of "soil fatigue" is thus shown to be directly related to monoculture. As a result of a definite "specialisation" of the various plants in regard to the effects of repeated cultivation it is necessary to determine for

each plant the factors which cause this fatigue, distinguishing between the enfeeblement of the plant due to the diminution of nutritive substances and the physical and biological aspects of the problem. This last in many cases will be found to be a decisive cause of the fatigue although the particular organism remains unidentified for several important crops, including flax.

(6) In Rio de la Plata, which is now the most important region in the world for the production and export of flax as an oil yielding plant, a certain interest is noticeable in the repeated cultivation of flax on the same land. Experimental studies on this question were started at La Estanzuela and have been carried on without interruption since 1922-23.

(7) Among the main results obtained in the course of these experiments must be noted in the first place the confirmation of the previous empirical observations on the specific resistance of certain indigenous varieties of flax (Malabrigo, San Martin) to repeated cultivation, thus allowing to a relative extent the practice of monoculture, in which the farmers are more or less interested according to circumstances.

(8) By biological selection experiments the Phytotechnical Institute is endeavouring to accentuate their resistance in the types called "resistant" to repeated cultivation. But without doubt it would be risky even by using this selected seed to abandon completely the technical principles of crop rotation, and three years in succession are indicated as the prudent limit for the repetition of a flax crop even with resistant varieties.

(9) In the course of the permanent rotation trial begun in 1917-1918, three monocultures of cereals were studied, namely, wheat, oats and maize, comparing them with methods of rotation cropping. The adverse effect of prolonged monoculture of wheat and oats were already visible in the average yields obtained for the period 1917-1918 to 1926-27. The increased yields given by the single factor of rotation vary between 14 and 83 % for the six cases of wheat studied and between 8 to 23 % respectively for the two cases of oats. As regards the period 1917-1918 to 1921-22, although it was endeavoured to improve by appropriate cultural methods the crops in general and consequently the values of the absolute yields, a certain interesting parallelism with the first series of figures is observed, which confirms the inferiority of the two monocultures as compared with the same crops in rotation.

(10) In opposition to the results obtained up to 1926-27, the monoculture of maize prolonged until 1931-32 clearly shows a falling off in the vigour of production. This fact, which is in opposition to the parallelism noted in the relative yields of wheat and oats, indicates clearly the unfavourable influence of continuous repetition, even for this crop which in my work *Observaciones sobre agricultura* I term "restorative" for the soil.

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## Agricultural Experimentation in Egypt.

In Egypt agricultural research is under the control of the following organisations: the various Sections of the Ministry of Agriculture (Agronomy, Botany and Plant Breeding, Propagation, Entomology, Mycology and Chemistry), the Royal Agricultural Society, the State Domains Department and the Cotton Research Board. Each of these organisations has under its direction a certain number of experiment stations, a detailed list of which follows.

### A. — STATIONS UNDER THE VARIOUS SECTIONS OF THE MINISTRY OF AGRICULTURE

#### I. — AGRONOMY AND PROPAGATION SECTION.

(1) *Gemmeiza Experiment Station.* — This station which was started on 1 March 1915 is situated in the Gemmeiza inspectorate (Gharbia province, north of the Delta) where the climatic conditions are temperate and slightly humid. The total area is 1378 acres. A quarter of the farm area is used for experimental purposes and the rest for propagation. The soil varies between clay and light loam. The personnel of the farm is as follows:

*Inspector:* Hamed Mohammed El Bulkeiny Effendi.

*Technical Assistant:* Galal Ahmed Galal Eff.

*Assistants:* Mohammed Fouad Mohammed Eff., Siddeek Attia Zein Eff., Ali Bissa Ammar Eff., Ibrahim El Said El Rifaii Eff.

*Mechanic:* Said Ahmed El Emani Eff.

*Technical Overseer:* Abdel Maksud Mohammed Eff.

*Dairy Assistant:* Mohammed Ahmed Selin Eff.

The Gemmeiza farm is subsidised by the Ministry of Agriculture; the expenditure for 1932 was 10 452 pounds sterling and the revenue was 19 812 pounds.

(2) *Sods Experiment Station.* — Started on 26 October 1931; it is situated in Beni-Suef in Middle Egypt, where the climate is temperate and dry. The total area is 945 acres; 25 % of the acreage of the farm is used for experimental purposes and the rest for propagation. The soil varies from clay to light loam. The technical staff is as follows:

*Delegated Inspector:* Ahmed El Said Abdel Al Eff.

*Agronomist:* Mohammed Abdel Soud Shedid Eff.

*Assistant:* Abdel Monim Makkawi Eff.

*Field Overseer:* Hamadein Soliman Eff.

Sods Station is subsidised by the Ministry of Agriculture; its expenditure in 1932 amounted to 7 397 pounds and its revenue to 14 624 pounds sterling.

(3) *Mallawi Experimental Station.* — Founded at the same time as that of Sods. It is situated in Assuiot province, Upper Egypt. The climate is temperate and dry. The area is 365 acres, of which 100 are used for experiments and the rest for propagation. The soil varies between clay and light loam.

The technical staff of the farm is as follows :

*Superintendent* : Mohammed Mahmoud Ahmed Eff. — *Field Overseer* : Mohammed Ibrahim Eff.

The Mallawi Station is subsidised by the Ministry of Agriculture; its expenditure in 1932 amounted to 3 790 pounds and its revenue to 7 496 pounds sterling.

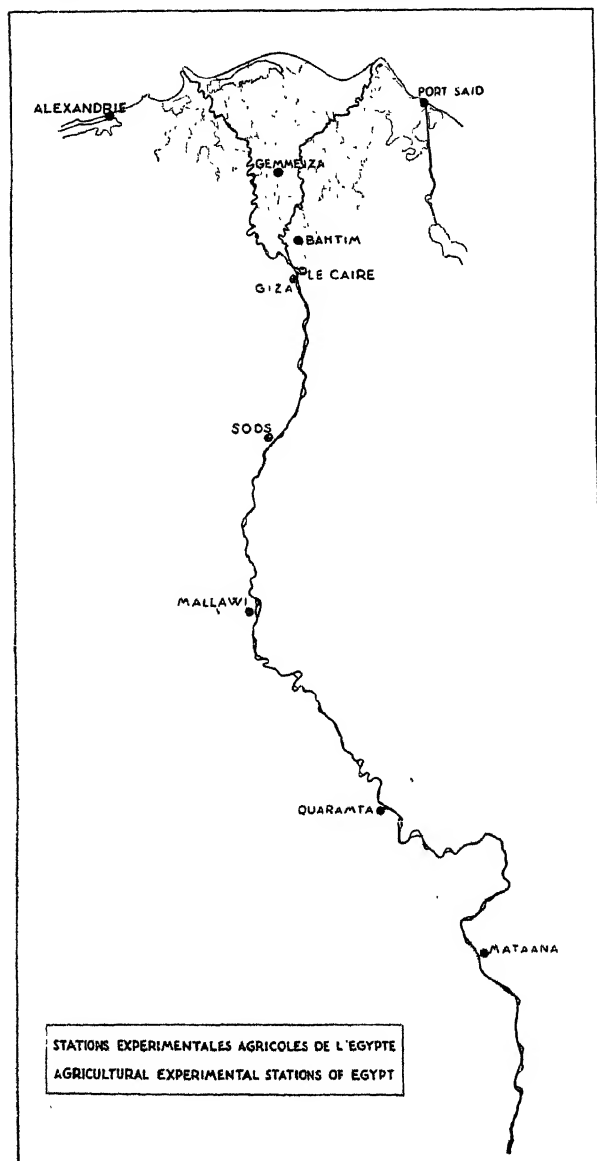


FIG. 1. — Map showing position of Experiment Stations.

land of the farm is 400 acres, of which 100 are used for experimental purposes and the rest for propagation. The soil varies from clay to light loam.

(4) *Mataana Experiment Station*. — Opened on 27 October 1931. It is situated in Qena province in Upper Egypt where the climate is hot and dry. The total area of land belonging to the farm is 834 acres, of which one fourth is used for experimental purposes and the remainder for propagation. The soil varies from clay to light loam.

The technical staff is composed as follows :

*Delegated Inspector* : Rizk Mousa Eff.

*Assistants* : Nassief Yosef Gabran Eff., Yehya Tewfic Maged Eff., Abdel Aziz Affi Eff.

The Mataana Station is subsidised by the Ministry of Agriculture; in 1932 its expenditure amounted to 10 352 pounds and its revenue to 16 638 pounds sterling.

(5) *Quaramta Experiment Station*. — Opened on 2 November 1932. It is situated in Girga province in Upper Egypt where the climate is hot and dry. The total



The Quaranta farm is under the Superintendent, Abdul Wafa Badawi Eff. It is subsidised by the Ministry of Agriculture ; its expenditure in 1932 amounted to 3 420 pounds and its revenue to 1 923 pounds sterling.

All the farms (exclusive of the Giza Station) are equipped with the necessary agricultural implements. Genmeiza farm contains rest-houses accommodating dwellings for the staff, a station for cattle and poultry breeding, and a model dairy. The other farms do not yet contain buildings besides the dwellings but the other necessary buildings are in course of construction.

The main work carried out by the Stations (exclusive of Giza) is the multiplication of pure seed of the various agricultural crops, in addition to experiments with the object of ascertaining the best agricultural methods, the most suitable manures and quantities to be applied, the number of irrigated crops, the proper spacing of plants, variety tests, etc. The economic point of view is always taken into consideration in interpreting the results of these experiments.

The results are published annually and disseminated among farmers. They are also referred to in the agricultural reviews published by the Ministry and distributed free of charge among big cultivators. Pure seeds are supplied to cultivators subject to a special contract.

The stations issue no publications of their own.

The main languages used in correspondence are Arabic and English. The accompanying map shows the region of activity of each Station.

## II. -- BOTANICAL AND PLANT BREEDING SECTION, GIZA.

The Botanical and Plant Breeding Section has its head office at Giza, 3 miles south of Cairo. It was founded by the Egyptian Government in 1905. The climate is subtropical. The land belonging to the Section is 70 acres ; the soil is rather heavy loam.

The total staff employed by the Section is 180 persons, of whom about 60 are seasonal. The technical staff is composed as follows :

*Cotton Technologist* : Dr. Lawerns Bolls, Sc. D. i., F. R. S.

*Chief Botanist* : Dr. J. Templeton, B. Sc., Sc. D.

*Sugar Cane Expert* : Dr. A. H. Rosenfeld, D. Sc., M. Sc.

*Cereals* : M. G. P. Morris, B. A., M. A.

*Seed Control* : A. Bedivian Eff., Dipl. of Agric. Giza.

*Cotton Genetics* : Gadalla Abu El Ela Eff., Dipl. of Agr. Giza B. Sc., M. S.

*Cotton Breeding* : Mahmoud Fawek Eff., Dipl. of Agr. Giza.

*Physiology* : Mahmoud Abdulla Zaghoul Eff., Dipl. of Agr. Giza.

*Fibre Crops* : M. Ali Kilani, Dipl. og Agr. Giza, B. Sc., M. Sc., Ph. D.

*Cytology* : Abdel Gaffar Eff., Dipl. of Agr., B. M. Sc.,

*Statistics* : Albert Weinstien Eff., Licencié en droit (Paris).

*Herbarium* : Yousef Shabatai Eff., Dipl. of Agric. Giza.

The main work of this Section relates to cotton : production of new varieties, improvement of methods of cultivation and selection of new strains.

The Section keeps in direct contact with the big cultivators. It publishes its results in the annual report of the Cotton Research Board and in the Technical Bulletins of the Ministry of Agriculture.

The chief languages of correspondence are Arabic and English. The Section is subsidised by the Egyptian Government; the annual grant is about 23 000 Egyptian pounds.

### III. — ENTOMOLOGICAL SECTION.

The Entomological Section has an experimental station which is situated at Dokki, near Cairo, and acts as a centre for entomological work over all Egypt. The Dokki Station was founded in 1911. The section was known as Plant Protection Section from 1926 until 1933, when entomological research was separated from the Mycology and Crop Protection Sections.

There are about 20 acres of permanent experimental fields, but experiments may also be carried out on private property.

The technical staff is composed as follows:

*Director*: Dr. H. Priesner.

*Specialists*: A. M. Mistikawy Eff. (Locusts). ; I. Bishara Eff. (Cotton insects); Dr. M. Kamel (Parasites of insect pests); Dr. I. B. Soliman (Aphids); Rizk Attia Eff. (Pests of stored products); M. S. el Zoheiry Eff. (Fumigation experiments); Raghib Abdel Malik Eff. (Collection of insects); Dr. M. Shafik (Chemistry of insecticides); Dr. A. A. Ghabu Eff. (Vine and melon insects); De. I. Fahmy (Borers of maize and sugar cane);

*Assistants*: M. Housny Eff.; M. Hussein Eff.; N. Luka Eff.; M. S. Des-souki Eff.; A. Kassab Eff.; E. Kassessinoff.

The Section is divided into several branches each dealing with one or more problems, such as: (a) Locusts, grasshoppers, mole crickets; (b) Cotton insects; (c) Pests of stored products; (d) Scale insects; (e) Borers of maize and sugar cane; (f) Aphids; (g) Pests of vine and melon; (h) Research on insecticides; (i) Collection of insects; (j) Parasites and predators.

The results of the research on these various questions are published in either Technical Bulletins, leaflets, circulars or in the agricultural journals. The agricultural Inspectors and Assistants convey the results to the farmers.

### IV. — MYCOLOGICAL SECTION.

The Mycological Section has research fields at Dokki, Giza (at the Cotton Research Building) and at the experimental farm of the Horticultural Section. These stations were started respectively in 1932, 1919 and 1930; they have areas of 21, 2 and 10 acres respectively.

The technical staff is composed as follows:

(1) *Dokki Station*: Er. Mamoun Abdel Salam (Diseases of potatoes and rice); Dr. A. B. Sirag El Din (Diseases of grapes and citrus); Dr. A. Fikry (Diseases of Prunus, cucurbits and mangoes); Mr. A. Seif el Nasr (Diseases of bananas and cereals); Mr. A. Hamdi Abu Gabal.

(2) *Giza Station*: Tewfik Fahmy (Cotton diseases); Tewfik Michael (Diseases of tomatoes and watermelon); M. M. Askar Eff. (Diseases of haricot beans); I. Minchawi Eff. (Wheat rust).

(3) *Delta Barrage Station*: Dr. A. B. Sirag el Din (Diseases of citrus and grapes); Dr. A. Fikry (Diseases of Prunus, cucurbits and mangoes).

The results are published by means of leaflets, posters, lectures, press notices and articles.

#### V. — CHEMICAL SECTION.

The laboratories of the Chemical Section are at Giza. The Chief Chemist is W. T. H. Williamson. The Section is subdivided as follows:

(1) *Research Division*. — The staff of this division is composed of:

(a) *Soils and Manures*: David S. Gracie; Mahfouz Rezk; Ahmed Mukhtar; Fahmy Khalil; Mohammed kadi.

(b) *Organic Manures*: Ahmed Riad.

(c) *Field Experiments*: Abdel Aziz Nassar.

(d) *Irrigation and Drainage*: Mohammed A. Aly; Clement Shabatai; Ahmed Ghalaby.

(2) *Analytical Division*. — The staff of this division is composed of: R. Aladjem, Ali Raghib, Hafez Rifai, M. Riad Ahmed, Abdel Ghafour Hassan.

#### VI. — HORTICULTURAL SECTION.

The Horticultural Section has an experimental station at Delta Barrage which deals with questions concerning horticultural and tree crops.

#### B. — STATIONS UNDER THE ROYAL AGRICULTURAL SOCIETY

(1) *Bahtim Experiment Farm*. — (Fig. 2) Situated at the village of Bahtim, 15 km north of Cairo. It was started in 1910 to replace stations at Giza and Mit el Diba. It is supported by the Royal Agricultural Society and is under the control of the Technical Section of the Society. The permanent staff consists of the Superintendent, Mr. Aly Sirry, and 3 assistants; the seasonal staff is an average of ten. In addition the experimental work on chemistry, botany, plant breeding and entomology is superintended by the heads of the competent Sections of the Society.

The activities of the Farm relate to (a) plant breeding experiments and propagation of cotton, wheat and maize; (b) permanent experiments on nutritious elements and rotations; (c) seasonal manurial trials; (d) agricultural trials; (e) breeding of stock animals.

Results are published in the publications issued by the Society. Field demonstrations are also carried out in several districts of the country, circulars are distributed and agricultural shows are organised.

(2) *Kafr Farouk Station*. — Situated at Kafr Farouk village, 20 km east of Cairo. It was constructed in 1930 by the Royal Agricultural Society. The climate is not extreme. The area of the Station is 55 acres.



FIG. 2. — Bahtim Experiment Farm.

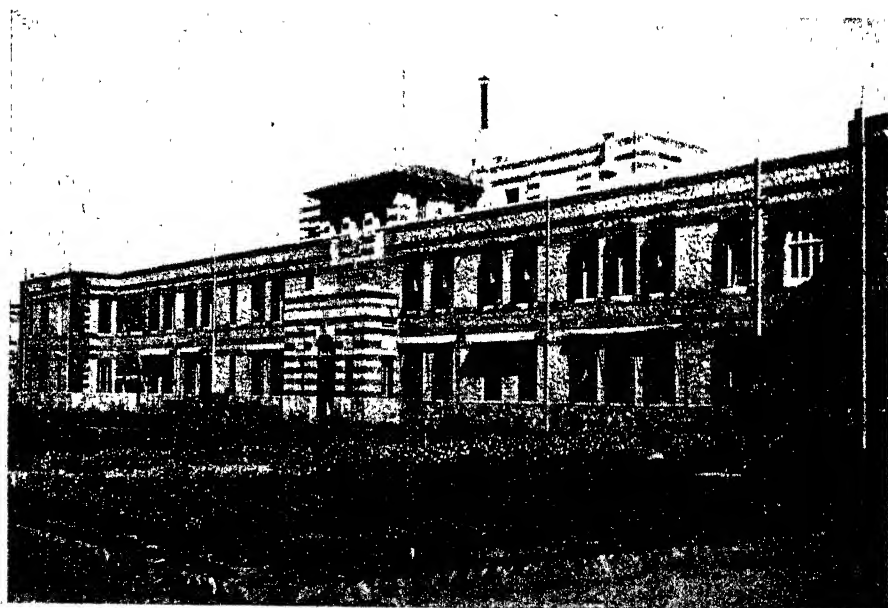


FIG. 3. — Cotton Research Board building at Giza.

The Kafr Farouk Stud is for the purpose of maintaining the purity of the best pedigreed Arab horses and producing pure Arab stallions for the purpose of increasing the number of stallions distributed each year by the Royal Agricultural Society in the villages of Egypt with the object of improving the horse breeding among the farmers. It is directed by the Animal Breeding Section of the Royal Agricultural Society, of which Dr. Ahmed Mabrouk is Chief Veterinary officer and Dr. Abdel Alim Ashoub, Veterinary Officer.

The Station is supported by the Royal Agricultural Society; its annual expenditure amounts to 3000 Egyptian pounds.

### C. — COTTON RESEARCH BOARD

The Board (Fig. 3) has its headquarters at Giza. It was formed in 1919 to co-ordinate and direct all researches on cotton. In course of time its functions have changed. It was reorganised on August 23, 1928 to serve as a means of liaison between the various administrations concerned in cotton problems. The Board thus forms a convenient means of obtaining general consideration on broad lines for problems of cotton cultivation and serves to introduce new information and discoveries to the administrations likely to be affected thereby.

The Board has a large library to supply the research workers with the literature required for their work.

A Laboratory Research Committee also exists and includes all research workers in the various laboratories. This Committee meets once a month to discuss the monthly reports submitted by its members, thus enabling each individual to have a general knowledge of the work and problem of his colleagues.

The Board supervises the publication of its Annual Reports, the Report of the Laboratory Research Committee, the Technical Bulletins concerning research work, etc.

J. LEGROS.

## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

TROPICAL AND NON-TROPICAL RAINS: COMPARISON OF NITROGEN CONTENTS AND THE ANNUAL AMOUNTS OF NITROGEN SUPPLIED TO THE SOIL. — In the *Indian Journal of Agricultural Science* (Delhi 1933, Vol. III, Part II) a very interesting study of this subject is published; figures are given relating to three localities in India (Sylhet, Delhra Dun and Cawnpore) which are then compared with those obtained in tropical, subtropical and temperate regions in other parts of the world.

It is recalled that N. G. H. MILLER in his summary (1905) of the results of analysis of the rain water of 32 different places in tropical and non-tropical countries noticed that in general in non-tropical countries the proportion of ammonia was higher, while in the tropics that of nitric nitrogen was in excess; but he remarked that further analysis was desirable. This further analysis has been carried out by the writers of the article in question.

It is recalled, further, that J. W. LEATHER, who was the first to make complete systematic analysis of the composition of rain water in India, concluded from the results of his analysis (1906) that the total quantity of nitrogen carried by the rain to the soil at Dehra Dun and Cawnpore was approximately equal to that in the rain at Rothamsted, namely, 3.40—3.25—3.84 pounds per acre respectively; but that the relative amount of nitric nitrogen was higher at Dehra Dun and lower at Cawnpore than at Rothamsted. He tried to explain the difference by the difference in altitude as also by the fact that the rains of Dehra Dun were more frequently accompanied by thunderstorms than those of Cawnpore.

The three writers, ANANDA KISHORE DAS, GOPAL CHANDRA SEN and CHANDRA KUMAR PAL, working at Sylhet made weekly determinations during 12 consecutive months (1931-1932) and obtained figures which are much in excess of those of the localities cited, both as regards the total rainfall and the nitrogen content. The high rainfall is explained by the fact that Sylhet is only 25 miles south of Cherrapunji in Assam, which has the reputation of having the highest rainfall in the world, for which the summer monsoon is responsible. An average of 28 years showed a rainfall of 457.80 inches of which 428.13 inches fell between the months of April and September. The monsoon passes Sylhet to reach Cherrapunji, hence Sylhet receives a heavy rainfall: an annual average of 150 inches, and during the year under review 155 inches. Besides, the type of clouds which are generally noticed during Sylhet rains is cumulo-nimbus and these are frequently associated with thunderstorms, which explains the higher percentage of nitric nitrogen than in the other two Indian stations and in Rothamsted.

The rain of Sylhet is also much richer in ammonia than that of the three other localities, which is attributed by the writers partly to the ammonia carried from the

*Comparison of Nitrogen Content of Rain in different Localities.*

Locality or Region	Rainfall	Nitrogen (pounds per acre)			Ratio of ammonia to nitric and nitrous nitrogen
		As ammonia	As nitrate and nitrite	Total	
<i>America</i>					
Venezuela . . . . .	...	14.300	...	...	...
British Guiana . . . . .	106.71	1.321	2.190	3.511	1 : 1.66
Barbados . . . . .	59.40	1.009	2.443	3.452	1 : 2.42
<i>Africa</i>					
Pretoria . . . . .	24.31	6.587	1.083	7.670	1 : 0.16
Durban . . . . .	42.34	3.651	1.234	4.884	1 : 0.34
Mauritius . . . . .	...	...	6.340	...	...
<i>Asia</i>					
Sylhet (India) . . . . .	155.05	4.533	3.757	8.290	1 : 0.82
Dehra Dun ( " ) . . . . .	86.48	2.037	1.368	3.405	1 : 0.67
Cawnpore ( " ) . . . . .	49.36	2.482	0.768	3.250	1 : 0.31
<i>Oceania</i>					
Brisbane (Queensland) . . . . .	45.44	2.228	1.920	4.148	1 : 0.86
Cairns ( " ) . . . . .	75.15	1.355	1.766	3.121	1 : 1.30
Lincoln (New Zealand) . . . . .	29.70	0.513	1.198	1.711	1 : 2.33
<i>Europe</i>					
Rothamsted . . . . .	27.25	2.710	1.130	3.840	1 : 0.43

sea by the monsoon, but mainly to the biochemical activity on the marshy lands under the tropical sun : part is due also to city pollution.

The sources of nitric nitrogen are (1) direct oxidation of atmospheric nitrogen by lightning discharges and (2) the oxidation of ammonia by the atmospheric oxygen under electric disturbances and also by ozone or hydrogen peroxide ( $H_2O_2$ ), both of which increase with electric disturbance of the atmosphere. According to current theory the tropical rain should have also a higher percentage of nitric nitrogen due to more frequent electric disturbances.

The following table summarises the data obtained by the writers in India and compares these with the available data for other localities in tropical, subtropical and temperate regions in other parts of the world (including Rothamsted, for Europe).

A study of this table shows the following facts :—

(1) There is considerable variation in the total rainfall, the content in ammoniacal and nitric nitrogen and in the total quantities of nitrogen supplied to the soil in the different localities or regions.

(2) The opinion of MILLER that tropical rain does not supply to the soil an essentially greater amount of nitrogen than the rain of the temperate climates is found to be contradicted by the results obtained at Venezuela, Pretoria, Sylhet, Mauritius and Durban.

(3) The other opinion of MILLER that in general there is a greater content of nitric nitrogen in tropical rain and a greater content of ammoniacal nitrogen in non-tropical rain is not borne out by the results obtained at Venezuela, Pretoria, Sylhet, Cawnpore, Delhra Dun and Brisbane, where ammoniacal nitrogen was in excess.

(4) With the exception of Venezuela, for which data relating to the rainfall and nitric nitrogen content are lacking, Sylhet would appear to beat the world record for rainfall and for the total quantity of nitrogen supplied to the soil. The latter is equivalent to about one fifth of an average nitrogenous fertiliser.

T. B.

### Soil Science.

METHODS OF PREPARATION OF SOIL SAMPLES FOR MECHANICAL ANALYSIS AND THEIR INFLUENCE ON THE DEGREE OF DISPERSION (1). — (A) In *Fortschritte der Landwirtschaft* (Berlin-Wien 1933, Heft 16) L. POZDENA describes his research on this subject using the following processes of preparation :—

- I) Steeping for 12 hours in distilled water.
- II) Same treatment followed by action of a current of air for 6 hours on the soil in water suspension ("cold boiling") (2).
- III) As in method I, then agitation for 6 hours in a rotating apparatus.
- IV) Boiling for 1 hour in distilled water.
- V) Steeping for 12 hours in a 0.2 % solution of lithium carbonate, then agitation for 6 hours in a rotating apparatus.

The following are the main conclusions of the writer :—

- (1) For practical reasons the process of mechanical analysis using the pipette is preferable to the usual processes by elutriation.
- (2) Preliminary treatment of the soil with a solution of lithium carbonate (method V) gives the maximum degree of dispersion, and satisfactory correspondence between parallel tests.

(1) See also, this *Bulletin* 1932, No. 1, p. 4.

(2) This process of VON NOSTITZ was described in the *International Review of Agriculture* 1926,

(3) Simple agitation does not give maximum dispersion, but gives however a very constant degree of dispersion and may be recommended when it is desired to approximate as closely as possible to natural conditions.

(4) Boiling is not recommended, for it does not yield a sufficiently constant degree of dispersion.

(5) The same may be said for simple steeping in distilled water, although this modifies least the natural state of the soil.

(6) The action of a current of air ("cold boiling") separates the soil particles only little more than simple steeping.

(7) In each lot separated according to fineness the degree of dispersion is proportional to the diameter of the grains.

(8) Saline soils have to begin with, in consequence of the Na ion, a degree of dispersion nearer to the maximum than other soils and are therefore less influenced by lithium carbonate.

(B) The same subject has received careful study by W. Gössl, at the Higher School of Agriculture and Forestry at Prague (Czechoslovakia). (*Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde*, Berlin 1933, Teil A, Bd. 31, Heft 1-3). The writer remarks that for practical agricultural purposes it is not recommended to use methods of treatment with too active chemicals, such as HCl, NaOH, etc., which destroy the natural texture of the soil and do not give a true picture of its physical constitution. For this reason the writer prefers the International Method B which gives results corresponding better with the natural state of the soil in the field and gives a better idea of its physical properties than the International Method A, which uses chemicals and is more suited for purposes of research.

The four following processes of preparation were compared:

I) Steeping in distilled water (24 hours) of un-dried soil samples.

II) Same treatment followed by shaking.

III) Preparation by "cold boiling".

IV) Treatment of humus soils by hydrogen peroxide.

The following conclusions were reached:

(1) The use of moist soil samples is more satisfactory than that of dried samples.

(2) With this method steeping of light (sandy) soils for 24 hours in distilled water, followed by shaking, gives good results.

(3) For heavier soils such steeping is insufficient and more drastic treatment is required.

(4) Therefore for mineral soils poor in humus treatment by "cold boiling" gives the best results.

(5) For humus-rich soils however this treatment is unable to separate the particles cemented into lumps by the humic substances. Such samples must be treated by hydrogen peroxide to destroy the humic cement and good results are then obtained.

THE CHEMICAL COMPOSITION OF AQUEOUS EXTRACTS OF SOILS AND THEIR PEDOLOGICAL IMPORTANCE. — At the Soil Science Laboratory of the 'Polytechnikum' of Budapest M. L. KOTZMANN has analysed aqueous extracts of a series of typical soils of Hungary and Spain. The results as published in the *Mezőgazdasági Kutatások* (Agricultural Research) (1933, No. 2) are as follows:—

The aqueous extract of a soil may not correspond exactly to the 'soil solution', by which is meant the liquid circulating in the soil in the field. It differs not only in the concentration of the dissolved substances but also in their composition.



The extract gives however sufficiently reliable indication regarding the anions and cations which play the principal role in the soil solution.

There are striking differences between the different types of soil in this regard which allow of their characterisation.

T. B.

### Fertilisers and Fertilising.

AGRICULTURAL UTILISATION OF URBAN REFUSE BY THE 'ZYMOS' PROCESS. — In the *Vie agricole et rurale* (1933, No. 15) M. J. BORDAS gives an account of a French process which has been in use for some years in certain towns in south-east France, particularly in Cannes, Aix-en-Provence, Valence and Avignon, for treating all the town refuse (household waste, sewage, slaughterhouse waste and road sweepings) in such a way as to produce a sterilised farm mould.

The refuse is tipped automatically into silos in which it undergoes, in the required conditions of aeration, moisture and bacterial inoculation, biochemical reactions which in less than a month decompose it into humus. The gases are recovered and deodorised.

Refuse which in the first stages of fermentation has for over 3 weeks been submitted to a moist temperature of upwards of 75°C is thoroughly sterilised. During storage it undergoes less active fermentation and then after sorting and milling it is delivered to the farmers. The product is a blackish, odourless and slightly moist mould with an alkaline reaction. Its value as fertiliser is about twice that of a good stable manure.

USE OF CHEMICAL FERTILISERS IN EGYPT (1). — In the *Bulletin de l'Union des Agriculteurs d'Égypte* (January 1933) M. ANIOURY has published a study on the question of the use of chemical fertilisers which has developed rapidly since the first importations made in 1900 by the Royal Agricultural Society. In 1910 36 000 tons of fertilisers were imported, in 1920 120 000 tons and in 1929 about 328 000 tons, then in consequence of the economic crisis the imports fell, as is shown by the figures for the years 1929-30-31 which were respectively 327 863 - 316 818 - 273 901 tons.

As this diminution in the use of fertilisers was a danger to the productivity of the Egyptian soil, a large part of the imports in 1930 and 1931 was distributed to the farmers on credit by the intermediary of the Agricultural Bank.

Egypt imports mainly nitrogenous fertilisers (sodium and calcium nitrates, ammonium sulphate and sulphonitrate and calcium cyanamide), which alone form over 80 % of the total imports. This predominance of nitrates is explained by the fact that in the alluvial Nile soils it is nitrogen that is chiefly lacking and is the limiting factor to crop production; it is also absorbed most rapidly and in greatest quantity by most of the crops.

The phosphatic fertilisers, of which scarcely 50 000 tons are consumed annually, consist mainly of superphosphate with a 16-18 % content in available  $P_2O_5$ .

Potash fertilisers are little used and complete fertilisers not at all.

Phosphate is applied chiefly to the Leguminous crops, bersim and beans, and also to cotton.

The nitrogenous fertilisers are on the other hand applied to all crops, particularly to wheat, cotton and maize, which are the crops typical of the three agricultural seasons of the Nile valley, namely, the winter season or *chétoui*, from October to February (wheat) — summer or *sefi*, from March to June (cotton, sugar cane) — flood season or *nili*, from July to September (maize). These three seasons now have an almost equal value,

(1) See also the *International Review of Agriculture*, 1926, N° 4. and this *Bulletin*, 1931, N° 6, pp. 209-210.

as shown by the consumption of nitrates from 1 July to 30 June 1930, which scarcely deviated by 70 000 tons.

As a result of about 700 depots situated in various regions of the country the distribution of chemical fertilisers to farmers is satisfactorily achieved.

EXPORTS OF POTASH SALTS FROM SPAIN FROM 1930 TO 1932. — The data given in the following table have been taken from the *Fertiliser, Feeding Stuffs and Farm Supplies Journal* (London 1933, No. 21).

1930	1931	1932			
22 536 tons	25 649 tons	65 939 tons, sent mostly to the following countries			
		Sweden	United States	United Kingdom	Italy
		23 270 tons	10 635 tons	8 855 tons	2 331 tons

It is evident that from 1930 to 1932 the exportation of these salts has been nearly trebled. At the same time the importation from 1929 to 1932 fell by nearly one third, being reduced from 19 172 to 7 652 tons.

The 1932 statistics do not mention the Netherlands separately which in 1933 have become an important market for potash salts from Spain.

T. B.

### Crops of Temperate Regions.

BREEDING EARLY-RIPENING VARIETIES OF SPRING WHEAT IN CANADA. — Practically all Canadian new spring wheat varieties carry the "blood" of Red Fife introduced into Canada about 1842. This is due to the fact that this variety proved to possess outstanding quality from the standpoint of the miller and the baker, a fact which has been of tremendous importance to the wheat-growing industry of the land. As early as 1888 extensive milling and baking tests were made to prove the quality of "Ladoga" introduced from Russia on account of its early ripening. In the same year 1888, initiating the great breeding-programme of the Federal Government of Canada, artificial crosses were made for the first time at Ottawa with the object of combining the high quality of Red Fife with the precocity of Ladoga. Other Russian and Indian varieties were introduced to be crossed with Red Fife. The most successful descendant has been the "Marquis". Its introduction in 1907 marked a new epoch in the agricultural life of Canada. It has come to be accepted as the standard of quality for Canadian wheat. But a still earlier ripening variety was needed for the northern parts of the country. It was obtained in 1926 by the introduction of "Garnet", ripening from six to twelve days ahead of Marquis. Garnet is the product of a complicated combination of Red Fife and several Russian varieties. From the standpoint of milling and baking qualities, Garnet undoubtedly does not rank as high as Marquis, although it can be considered a good milling wheat. Crosses of Marquis with the extremely early but not high-yielding variety "Prelude" produced the very promising variety Reward which, while equaling Garnet in earliness and high yielding capacity, excels it in milling and baking qualities. It is rapidly gaining ground in some wheat growing northern areas.

Whilst environmental conditions, and especially season, play an important part in determining the length of the growing-period, it has been found that the difference

between varieties as regards the number of days required to reach maturity is on the average fairly constant, as shown by the following table.

*Number of days from seeding to maturity.*

Variety	Number of days from seeding to maturity					
	1925	1926	1927	1928	1929	Five-year average
Marquis . . . . .	105	102	109	110	110	107
Prelude . . . . .	93	89	89	98	102	94
Reward . . . . .	100	95	102	99	104	100

(L. H. NEWMAN, *The Empire Journal of Experimental Agriculture*, Oxford, 1933, Vol. I, No. 1).

N. G.

REGIONS OF HARICOT BEAN PRODUCTION IN HUNGARY. — The Hungarian Ministry of Agriculture has decided to divide the country into districts in which only a particular type of bean may be grown. It is hoped by this means to obtain a uniform product, and it was attempted during the trial plantings in 1931 and 1932 to determine the varieties most suited to each region. Three main types have been chosen for growing on a large scale: — long white, flat white and pearl white. There are still grown in Hungary the middle white haricot and the so-called quail-egg haricot (with spotted beans), but these varieties were not largely represented in the trials.

The trials showed that in the dry regions of Hungary where the continental climate is unfavorable the pearl haricot is best suited to requirements, while in the more humid regions the long and flat types are best. (*Kísérletügyi Közlemények*, Budapest, 1933, Fasc. 1-3).

L. M.

THE EARLY ARTICHOKE IN CENTRAL FRANCE. — In the *Journal d'Agriculture pratique* (1933, No. 44) is some interesting information contributed by M. Martial LAFLAUD. In 1928 M. Henri PIQUET, a farmer at Magnac Bourg (Haute Vienne) introduced into the department of Haute Vienne from the department of Allier an early artichoke which flowers in August and can begin to be cropped early in September, about 2 months ahead of the ordinary varieties. Now, after 5 years of successful trials, this artichoke is grown not only in the commune of Magnac Bourg but also in many other departments of Haute Vienne. It is also grown in the departments of Indre and Allier (the region of origin).

The tubers of this variety are white. They are planted and cultivated like the winter varieties (white and purple), and like these are unfortunately often difficult to wash. Their food value does not appear to be higher than that of the purple variety. They never reach the height of growth of the winter varieties. In a normal year, however, the weight of the crop per hectare is equal to or even higher than that of the ordinary varieties.

The earliness of this artichoke makes it possible to anticipate considerably the usual date for beginning cattle fattening and to utilise the tubers for over 6 months. The earliness is useful also to the industries utilising artichokes, for it enables them to procure the tubers before the beginning of the frosts, which are liable to cause serious damage to artichokes. Risk of frost damage has, for instance, necessitated the American

factories manufacturing levulose from the artichoke to establish themselves in frost free districts because of the difficulty of ensuring their winter supplies of the tubers. This difficulty has even contributed to the failure of certain artichoke distilleries.

These facts show the importance that this early artichoke might develop.

T. B.

INFLUENCE OF FERTILISERS ON THE RELATIONSHIP BETWEEN THE INORGANIC CONSTITUENTS AND SUGAR CONTENT AND PURITY OF SUGAR BEET. — The quantity and composition of the ash of sugar beet are in direct correlation with the sugar content and purity. The ash (as percentage of the dry matter) or else the lime and magnesium (as percentage of the ash) are the constituents which furnish the most accurate criteria of the quality of sugar beet. The quantity and composition of the ash are influenced by the soil, seasonal variations, agricultural practices, fertilisers, etc. Thus, for example, excessive quantities of nitrates in the soil stimulate the assimilation of undesirable inorganic constituents, such as sodium and chlorine, with the result that the beets have a high percentage of ash and are of inferior quality and contain less sugar.

The following Table, which is taken together with the accompanying information from *Industrial and Engineering Chemistry* (Easton Pa. 1933, Vol. 25, No. 4), shows the effects of two different fertilisers on the composition of sugar beet and on the ash content. The fertilisers applied per acre were:— Plot I — 375 lbs of triple superphosphate. Plot II — 125 lbs of phosphate + 25 tons of manure.

	Percentage of dry matter		Percentage of ash	
	Plot I	Plot II	Plot I	Plot II
Purity . . . . .	86.9 %	76.6 %	—	—
Mean weight of beets . . . . .	457.2 g	653.2 g	—	—
Sugar content . . . . .	15.0 %	10.7 %	—	—
Ash in the dry matter . . . . .	3.35	6.14	—	—
SiO <sub>2</sub> . . . . .	0.033	0.028	0.98 %	0.45 %
R <sub>2</sub> O <sub>3</sub> . . . . .	0.027	0.011	0.85	0.17
FeO <sub>3</sub> . . . . .	0.008	0.006	0.25	0.10
MnO . . . . .	0.006	0.004	0.14	0.06
CaO . . . . .	0.176	0.133	5.26	2.16
MgO . . . . .	0.408	0.479	12.18	7.80
K <sub>2</sub> O . . . . .	1.162	1.951	34.69	31.80
Na <sub>2</sub> O . . . . .	0.513	1.422	15.29	23.18
Cl . . . . .	0.325	0.895	9.68	14.59
SO <sub>3</sub> . . . . .	0.111	0.127	3.30	2.07
P <sub>2</sub> O <sub>5</sub> . . . . .	0.261	0.224	7.79	3.66
N <sub>2</sub> O <sub>5</sub> . . . . .	0.131	1.211	3.95	19.46

The beets of the two plots showed marked differences in composition; in those of plot II there is a reduction in purity and in sugar content and a corresponding increase in ash content; on the other hand there is a considerable increase in the contents in sodium, chlorine and nitric nitrogen caused by the stable manure, which stimulates the assimilation of these elements and at the same time reduces that of the phosphates and sulphates. These results confirm the current opinion held among farmers that excessive manure and nitrogen tend to reduce quality in beets.

FORMATION OF PEACH ORCHARDS ON THE FRENCH RIVIERA. — The *Vie à la Campagne* for 1 November 1933 reports an interesting new activity of agriculturists in the region of Mandelieu. The restriction of the markets for mimosa and essential oil yielding plants (geranium, mint, rose, jasmine, etc.) has led to a search for more profitable crops by which to replace them. Peach culture has been chosen. The varieties grown are the following: — Mayflower, Amsden, Précoce de Hale, Benoni, Dr. Aribaut, Madeleine rouge and jaune, W. Willermoz, Saint Laurent, Elberta, J. H. Hale.

The fruits are hand graded by size and packed in different manners according to size: —

- (1) trays for 1st size (18 to 24 fruits per tray);
- (2) trays for 2nd size (28 to 32 fruits per tray);
- (3) crates with two layers for 3rd size (64 fruits per crate).

It is proposed to build a jam factory to utilise the second grade fruit.

G. R.

### Tropical and Subtropical Agriculture.

THE DEVELOPMENT OF TREE ROOTS IN A TROPICAL REGION. — A further part of the excellent monograph by Dr. C. COSTER has just appeared under the title: "Wortels-tudien in de tropen: IV. Wortelconcurrentie" in the *Landbouw* (Buitenzorg 1933 Vol. 9, No. 1, p. 1-48; in Dutch with summary in German). It is of equal interest to the preceding parts which were summarised in this *Bulletin* in July 1933 (p. 323-325). The problem of competition between the trees in a forest \* or in a plantation of coffee, rubber, cacao or any other cultivated tree has been widely studied, but accurate observations are almost completely lacking. It is difficult to obtain a reliable idea of the factors influencing root competition. It seems certain that soil desiccation as a result of leaf transpiration comes into play. There may also be competition with regard to the absorption of the inorganic salts in the soil. Plants which are resistant to lack of oxygen will have an advantage over those dependent on much oxygen.

The influence of possible toxic secretions from the roots is not fully understood. In a short preface the writer mentions all these factors to give the reader an idea of the present state of knowledge on the subject. In the body of the work two questions are dealt with: (1) the influence of adjacent forest on new plantations of forest species or food plants; (2) root competition in mixed crops.

For a study of the former question plots of land adjoining forest were separated from the forest by trenching. Isolated fields alternated with control non-isolated fields and the experiment was several times repeated. In all 53 isolated fields were compared with 48 control fields. The results showed in every case the marked adverse influence of adjacent forest and the influence could be attributed only to the single factor: root competition. The possibility of the influence of better aeration or better drainage due to the trenches is ruled out as the same result was obtained when the trenches were filled in again immediately after the roots of the adjoining forest growth had been cut. The favourable effect of trenching was not apparent only in the case of young plantations for the influence of old forest on forest plantations of 2 to 16 years' growth was also incontestable. In this case also the harmful influence may be removed by separating the newly re-afforested zone from the old zone by trenching.

The writer reaches the conclusion that such isolation trenches may render great practical service in any case in which it is required to protect the roots of young trees

\* In this connection see also in this *Bulletin*, 1931, N. 6, pp. 239-243, the article entitled: Recent Research Work on the Root Systems of Forest Trees.

against the competition of those of old trees. This opinion is supported in the experience of the present reviewer who recalls the case of a rubber estate in which young grafted trees had been interplanted between old trees and at first gave no growth; but when trenches had been dug round each transplanted tree a great increase in growth was observed. It goes without saying that the arrangement of the trenches is not always easy, for there is always the risk of harming the old trees by cutting their lateral roots. The experienced eye of the expert is needed to judge in each individual case the best method to adopt.

The influence of secondary trees in a teak forest was studied with much attention. Two maps are given showing areas of  $5 \times 5$  metres and  $9 \times 6.5$  metres in which are indicated all the roots of *Tectona* (teak) found in a layer 30 cm in depth, together with those of the other interplanted trees, namely, *Schleichera oleosa* (Kesambi) and *Actinophora fragrans* (Walikoekeo) in the first case and *Leucaena glauca* (Lamtoro) in the second. The preparation of these maps must certainly have been a long and arduous task but they are of great interest and should be reproduced in the textbooks of forestry and agriculture, for without having seen these maps it would be impossible to conceive the density of the network of the roots of the different species.

As a consequence of all these observations the writer forms the opinion that only the forest species forming a dense foliage and having quick growing tap roots which reach a great depth should be grown in association with teak. The trees which fulfil these requirements are chiefly those belonging to the Leguminosae and particularly *Leucaena glauca*.

This result is certainly important for the cultivation of teak, but in addition the methods applied in the investigation deserve the consideration of all agronomists concerned with the cultivation of trees and shrubs such as coffee, tea, cacao, etc. which are usually associated with shade trees.

W. B.

**TAPIOCA IN MALAYA.** — Investigations were undertaken by V. R. GREENSTREET and J. LAMBOURNE (*Department of Agriculture, Straits Settlements and Federated Malay States, General Series*, No. 13, Kuala Lumpur 1933) in order to solve the problems of tapioca cultivation in Malaya. Tapioca was of great importance there at the end of the 19th and at the beginning of the 20th century. It then lost its importance as shown by the figures for the area planted in tapioca which was reduced from about 80,000 acres in the first decade of the century to 34,000 acres in 1932. This was due to two causes: in the first place to the culture of rubber, which began between 1900 and 1910 and since that time has been the centre of interest; in the second place to the ill repute of tapioca which is generally supposed to be a very exhausting crop. For this reason the Governments of the Straits Settlements and of the Federated and non-Federated Malay States have continually forbidden the planting of tapioca or have allowed it only as an intercalary crop associated with rubber, coconut or other plants. After a preliminary study of the question the Government of the Federated Malay States in 1927 ordered that planting of tapioca on land intended for rubber must be limited to two consecutive crops.

GREENSTREET and LAMBOURNE have now shown by a series of experiments in fields planted with successive crops of tapioca during several years that soil impoverishment may be avoided if the necessary fertilisers are supplied. They reached the following conclusions:

(1) The average yield of roots for the second crop on untreated plots was ten per cent higher than that for the first crop; the third crop was smaller than the second crop but no smaller than the first.

(2) The effect of treatment with horse gram (probably *Dolichos biflorus*) and lime was to cause an increase in the second crop but no significant advantage in the third crop. Green manure alone failed to produce any increase in yield; artificial fertilisers (ammonium sulphate, superphosphate and potassium sulphate) produced a marked increase in the second crop but no further increase in the third crop. The effect of manure prepared by the A. D. C. O. process was uncertain. Cattle manure had little effect as compared with the control plots.

Treatment with horse gram alone or preceded by lime produced no significant variation in the composition of the crop. The nitrogen and phosphoric contents of successive crops show however a gradual increase, whereas the potash content (except in the case of the A. D. C. O. or cattle manure plots which exhibited a marked increase in yield) gradually diminished.

It is thus certain that in the soil conditions of Malaya successive crops of tapioca do not necessarily impoverish the soil provided that the necessary fertilisers are supplied at the right time.

We mention this result only, which *mutatis mutandis* applies also to other tropical countries. It should be added that the publication cited contains also interesting chapters on the history, botany, cultivation, diseases and pests of tapioca, on the preparation of cassava meal and tapioca, and on tapioca products and their uses and trade. The writers have naturally had in mind particularly the conditions of Malaya but these have also been compared with those of Java where a much more highly valued product is obtained than that of Malaya. It must however be taken into account that in Malaya the factories preparing tapioca products are owned by small growers and are extremely primitive whereas in Java some of the large European firms have great modern factories equipped with modern plant and provided with skilled workers.

W. B.

CLIMATIC AND SOIL REQUIREMENTS OF TEA. — This subject is treated in most manuals on tropical agriculture without sufficient study of recent research and with inadequate knowledge of the very diverse local conditions in which tea is grown. Mr. H. H. MANN, who perhaps alone possesses the wide experience in the greater number of the growing countries to treat the subject exhaustively, has contributed an article of outstanding interest to the *Empire Journal of Experimental Agriculture* (Oxford 1933, Vol. 1, No. 3, p. 235-252).

It would seem at first sight that tea cultivation would be possible in many regions of the globe as the plant grows as well in subtropical and even temperate regions, where frost is common, as in tropical zones. It is found however that its cultivation is restricted to south East Asia; with the exception of recent plantings in Central Africa (Nyasaland and Kenya) and the Caucasus. There is no commercial cultivation as yet on the American continent or in south Europe, in west Africa or in north Australia. This is explained by the fact that tea growing on a commercial basis requires in the first place a quantity of cheap labour.

The original home of the tea plant in the mountainous region between India, Burma and China and the spread from this area are other factors which may explain the present distribution of tea planting.

The climatic conditions which are found in all areas where tea cultivation is an established success are detailed below :—

(1) There should be no month without rain. The soil should never become dry for more than a very short distance below the surface.

(2) The total annual rainfall should exceed sixty inches; in the best areas it is considerably higher. At greater elevations and in more temperate conditions less rainfall is required than in really tropical conditions.

(3) The minimum temperature of the year should never fall below freezing point, and if it does, such occurrences should happen infrequently and at night only. This demand is not absolute, but if the winter temperature is more severe only the northern or China varieties can be cultivated successfully.

(4) The shade temperature of the hottest time of the year should not much exceed 90° F. And when high temperature occurs the relative humidity of the atmosphere should also be higher. The conjunction of a high temperature and a dry atmosphere is very dangerous, and its occurrence limits the extension of successful tea cultivation.

(5) The daily range of temperature should be small even in the cold weather and particularly during the season when growth is most vigorous.

(6) The absence of strong, and particularly of strong and dry, winds is very important. The soil requirements are well defined. From a geological point of view however a great variety of soils is found; tea in north east India occurs on alluvial land, the tea of Ceylon, South India and Sumatra is grown on sedentary soils mainly derived from gneiss and granite; in Java the tea soils are of volcanic origin. Tea is also found on red and grey soils. It should be noted also that the largest annual yields of tea have been obtained on well drained peat several feet deep in Cachar and Sylhet.

The first requirement of a tea soil is that it should be deep, with the lower layers porous, well drained and easily penetrable by the roots. On hard soils shade trees planted amongst the tea with roots penetrating to a great depth and thus opening up the layers of impenetrable soil have in some instances given good results.

Tea requires soils not containing more than a trace of lime and being definitely acid. The addition of lime which has been tried and frequently recommended in various countries has never given the expected results. The writer regards tea as a definitely calcifuge plant.

The optimum pH value of a tea soil varies between 5.2 and 5.6. The effects on the tea plant of soil that is definitely alkaline or insufficiently acid have been indicated by M. EDEN in a recent publication. He contends that soil alkalinity leads to failure of the main axis of the plant to elongate, and to the falling off of the leaves, leaving only those near the growing point; the tap root appears short, lateral roots are few and the root hairs are badly developed.

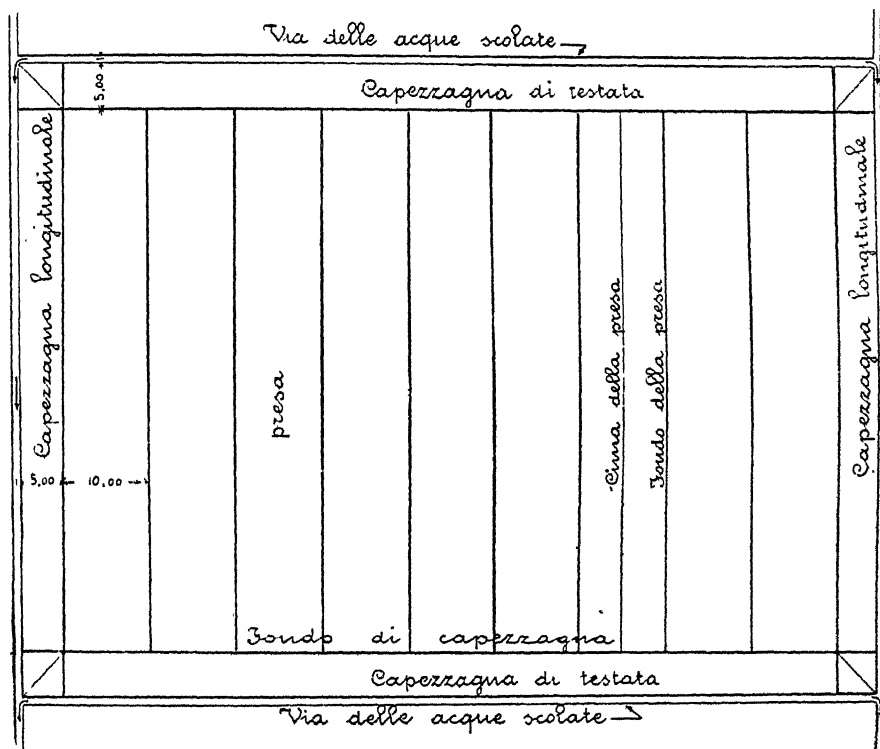
It goes without saying that a certain richness of the soil in available nitrogen is desirable. But it is interesting to note that an excess of nitrogen seems to be disastrous to the quality of the tea. The same appears to be true to a less extent in growing tea at high altitudes near the equator. The observations of different workers are not in agreement with regard to the influence of phosphorus on the yield and quality of tea; it is certain that potash increases the resistance of tea to pests and diseases. The relations between the tea plant and other soil chemicals are not yet adequately known. They are worthy of further exhaustive study. There are some available facts on the influence of iron, manganese and magnesium and certain recent investigations carried out by STOREY and LEACH in Nyasaland should be mentioned; they studied a chlorosis of tea, "tea yellows", apparently due to sulphur deficiency. This disease was cured by the application of sulphur or of sulphates of ammonia, potash or magnesium. In this connection the research of PRILLWITZ may be recalled which was summarised in this *Bulletin* 1932, No. 12, pp. 425-426.



## Agricultural Engineering.

THE "DEL PELO PARDI" METHOD OF LAND CULTIVATION. — Stagnant water and lack of water being the most important limiting factors for plant life, it is considered of paramount importance to discipline the meteoric water in the superstructure as well as in the subsoil in order to get a perfect agricultural soil by devising an adaptable physical-mechanical soil structure with the necessary humification. DEL PELO PARDI'S system is as follows.

FIG. 1. — Plan of a "unit of cultivation" as worked by the DEL PELO PARDI system.  
(Block kindly lent by the *Italia agricola*).



*Presa* = Bed.

*Cima della presa* = Peak of sloping bed.

*Fondo della presa* = Foot of bed.

*Capozzagna di testata* = Transverse headland.

*Capozzagna longitudinale* = Longitudinal headland.

*Via delle acque scolate* = Water run-off.

After having carefully observed the flowing off of rainwater the land is subdivided, according to the observed flow, into units of cultivation, each one controlling its own regime of water. Every unit is limited by the line of impluvium and displuvium, and therefore constitutes a zone of earth having a single slope. In its turn, each unit is subdivided into smaller sections that are ten metres wide and consist of two gently

sloping sides that join in the middle at the peak and at their lower ends adjoin similar subdivisions of the same unit of cultivation. All these subdivisions as a unit are in turn together surrounded by what are special types of headland, about 5 metres wide.

The definite sloping form of the surface and the requisite structure of soil and subsoil are gradually reached in three to five years by the application of what is styled the "Universal" plough and the "Rastro" devised by Professor DEL PELO PARDI. The plough has a quadrangular share. The breast consists of three surfaces that are contiguous, the first cylindrical, the second flat, and the third helicoidal. The beam is free to turn in a forwardly placed sleeve. The front part of the frame is carried on two wheels of equal diameter; which are mounted on a cranked axle with pronounced elbows.

The shape of the mouldboard itself means that the soil is worked in a special manner. In the passage from the cylindrical superface to the straight one, that part of the furrow

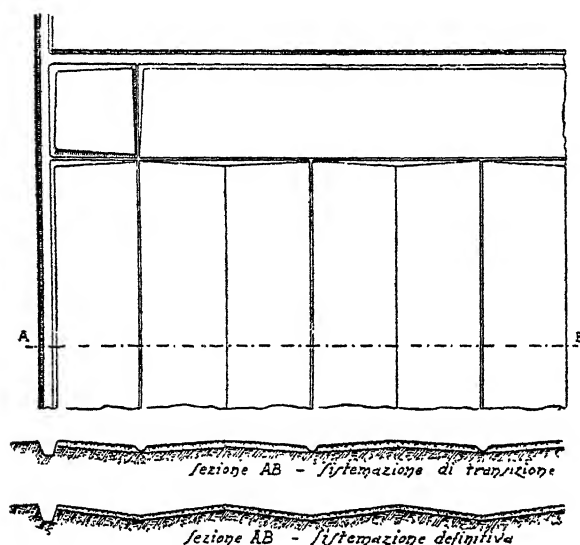


FIG. 2. — *Plan and section (AB) of land ploughed by the DEL PELO PARDI system.*

(Block kindly lent by the *Italia agricola*).

= Transitional arrangement.

= Final arrangement.

slice or prism in contact with the mouldboard, which is really the true subsoil, undergoes an acute pulverising action as the outcome of the brusque change of direction, the pressure of the upper structure and the pressure of other soil, which tends to ascend as the implement advances. The plough is so counterpoised that the pulverised part falls directly into the bottom of the furrow previously cut, while the superficial part feels less of the breaking effect of the cylindrical and straight sections of the plough body and is eventually inverted by the helicoidal section, to fall on the bottom soil that has already been deposited in a pulverised state. The plough is of special lightness of draft, being well within the capacity of a pair of animals.

The "Rastro" has much in common with a rake or a light cultivator but is said to accomplish a class of work outside the scope of any implement on the market to-day. It completely breaks up the subsoil and preserves the continuity between top and bottom layers, perfecting the work of the plough. By means of a special curve imparted to the teeth the non-decomposed organic matter is carried to the upper structure. It has a flexible frame to which are rigidly affixed working tines of square section terminating in lances or spears arranged in such a way as to avoid clogging up with top growth or

rubbish. It is claimed that when the land has been properly systematised, much ploughing becomes unnecessary, for eventually the land can be brought to a right tilth for the following crop by the use of the "Rastro" alone.

The DEL PELO PARDI method has been applied with great success in various parts of Italy. (*The Implement and Machinery Review*, London 1933, No. 702, p. 478-481; *L'Italia Agricola*, Roma 1933, No. 7, p. 750-764; *Corriere della Sera*, Milano, 29 October 1933, No. 257).

N. G.

RESEARCH AND EXPERIMENTS ON CHOPPING OF HAY IN THE UNITED STATES. — The practice of chopping hay is widely spread in the United States, more especially in the Middle West. The results of a survey of 100 farms and of experiments carried out at the Ohio Experimental Farm may be summarised as follows.

As the hay is unloaded directly into the chopper there is an economy in labour. Transport of chopped hay is effected by the blower. For unloading and storing 1 ton of chopped hay only 3.1 man-hours are required as compared with 4.1 with ordinary long hay. By speeding up the work in this way part of the risks of bad weather are avoided. Further, chopped hay occupies only one third of the space taken by an equal quantity of whole hay. For chopping the hay an ordinary fodder chopper for silage is used with only slight modification, and this can naturally also be used for feeding silos and for chopping straw from the thrasher. Cows eat chopped hay more quickly and digest it more easily. Calves become accustomed to chopped hay more quickly than to long hay. Finally, chopped hay is easier to handle. Livestock consume chopped hay entirely without wastage. This is of especial importance in the case of a hard fodder such as soya which, in the ordinary unchopped state, is wasted to about 25 % and when chopped to only 2 %.

The density of chopped hay is a drawback, for the flooring of the storage barns is not always strong enough to support its weight, and also such a dense mass is more open to risk of spontaneous ignition. (*Implement and Tractor Trade Journal*, Kansas City 1933, No. 13; *Agricultural Engineering*, St. Joseph U. S. A. 1933, No. 6).

N. v. G.

## Animal Husbandry.

### General Questions.

NEW ORGANISATION OF STOCK FARMING IN ITALY. — The Circular of the Ministry of Agriculture of 1 July 1933 and the statutes of the National Association of Stock Breeders, which have recently received the approval of the Ministry, mark a new stage in the stock farming of Italy. The Ministry has attempted to combine all the hitherto scattered activities into the hands of well defined bodies with clearly defined responsibilities. The new organisation provides for close collaboration between the various technical bodies of the Ministry (Agricultural Inspectorates, Zootechnica Institutes and Itinerant Professorships of Agriculture) and stockbreeders as represented by the Fascist corporate organisations (National Fascist Confederation of Farmers, National Fascist Confederation of Farmers' Syndicates, and the National Syndicate of Agricultural Experts). It is proposed also to form a National Association of Stockbreeders to act as a central organisation having its headquarters with the Farmers' Confederation and with the Confederation of Provincial Stockbreeders' Societies. The National Association is for the general encouragement of stock breeding and for forming a herd book and will be the central organisation directing the provincial

societies. The provincial society will form the intermediary through which the Itinerant Professorship of Agriculture will carry out its scheme for the improvement of stock-breeding. The duties of the provincial society will consist in keeping pedigree registers, promoting yield testing, registering approved bulls and ensuring that the service stations are provided with suitable breeding stock.

E. M.

ZOOTECNICAL RESEARCH AND ITS APPLICATION IN SOVIET RUSSIA. — From a highly interesting report by M. Victor BORET on agriculture in the U. S. S. R. (*Recueil de Médecine Vétérinaire*, published by the "Corps enseignant de l'Ecole d'Alfort", Paris 1933, tome CIX, No. 5) the following extracts are taken as being of special interest.

The Zootechnical Institutes and Stations which are under the direction of the Lenin Academy study particularly problems of endocrinology; artificial insemination, now extended to rabbits, foxes and dogs; artificial production of vaginal secretions similar to those of the rut; determination of pregnancy in animals by the occurrence of the hormones of the sexual cycle, which allows of recognising pregnancy at from 2 to 2½ months; hybridisation of wild cattle, sheep and pigs with domestic varieties; determination of sterilising substances occurring in fodders which prevent pregnancy; the antirachitic action of milk from cows fed brewers' yeast treated with X-rays; chemical treatment of straw with Glauber's salts and lime.

The Lenin Academy also supervises the keeping of 16 herdbooks, 5 of which are for foreign breeds and 11 for Russian breeds.

The Lenin Academy supports the Institute of Stock Breeding which consists of 17 laboratories dealing more particularly with the following subjects: intestinal worms, blood (haematology), genetic selection, biology, artificial insemination, biochemistry, endocrinology, physiology of digestion, metabolism (studies of the transformation of foods and all constituent elements of the animal organism), microbiology, physiology of growth, vitamin studies.

Eighteen other special Institutes are distributed over the territory of the U. S. S. R. and carry out research in connection with animals, large and small, including camels, deer and silkworms.

The activities of the Russian scientists are devoted particularly to animal husbandry. The results obtained in the matter of artificial insemination, in which Soviet Russia has come resolutely to the fore, deserve special mention. They have made general the application of methods which in Europe and America remain in the domain of the laboratory. The reason for this development is that the head of cattle in Soviet Russia has been considerably reduced as a result of the wholesale slaughter by the Kulaks in 1930 and by the peasants owners when collectivisation became imminent.

Moreover the lack of discrimination in the choice of breeding stock and the scarcity of good bulls have induced the Bolsheviks to generalise the use of artificial insemination.

A bull which by the natural method could serve only a small number of cows can with fewer services provide for the insemination of several thousand cows per year.

Artificial insemination also makes the control of sterility and prevention of infection during service easier.

There result therefore a considerable economy in the purchase of male breeding stock, as the life of the bull is prolonged as a result of fewer services, a reduction of infectious and contagious disease among cows and a reduction in the costs of service.

Processes for the storage of sperm have been perfected.

From June to mid-September 1930 19,860 cows had already been artificially inseminated with 83.7 % success. In 1931 the success was 92 %. In the same year 96,000 ewes were artificially inseminated, with 94 % success in the case of selected breeds and 85 % with crossbreds.

The Soviet Government in fidelity to its ideals of renovation at any price and following ultra-modern developments has in view the intensive use of ultra-violet rays for intensifying egg production and for accelerating the growth of chicks and pigs.

S. T.

#### Cattle.

INCREASED LONGEVITY OF THE COW AS A MEANS OF MAKING MILK PRODUCTION MORE PROFITABLE. — Nils PETERSEN states in an article published in the *Deutsche Landwirtschaftliche Tierzucht* ((Hanover 1933, Nr. 41, p. 712) that in Germany  $\frac{2}{3}$  of the dairy cattle are sacrificed before the age of 6 years.

Researches carried out in Denmark have shown that the yield of a cow in milk as in butter fat increases up to the 7th calf and diminishes only very slowly to the 10th calf. The ratio between consumption of fodder units and milk production becomes constantly better up to an age of 12  $\frac{1}{2}$  years. At 3  $\frac{1}{2}$  years a cow produces only 0.49 kg of milk per unit of fodder; at 7  $\frac{1}{2}$  years she produces 0.99 kg and at 12  $\frac{1}{2}$  years 1.13 kg. It appears that a cow becomes profitable to the farm only after her 6th year. From these facts and a number of others the writer of the article concludes that particularly in the present economic conditions it is of importance to have sound and resistant cows which give 9 or 10 calves, maintain their full yield for 10 years and reach an age of 14 to 16 years.

S. T.

STUDY OF THE ACCURACY OF DIFFERENT METHODS OF DAIRY COW TESTING IN ENGLAND. — On the basis of the monograph on *Dairy Cow Testing* published by the International Institute of Agriculture in 1925 Messrs. HOUSTON and HALE have carried out comparative studies of the different methods used in various parts of the world for testing milk and butter fat production. The results are published in the *Journal of Dairy Research* (London 1933, Vol. 4, No. 1, p. 37-47). It is shown that weekly weighing of the milk produced gives a result closely approximating to the effective milk production during the lactation period.

If the interval between the tests is longer the error increases. But so long as the interval does not exceed 6 weeks the error in the percentage of fat seldom exceeds 8.5 %; it is only in exceptional cases that it exceeds 12 %. The writers are of the opinion that in order to limit the error in the determination of the percentage of butter fat in milk the interval between two tests should not be greater than one month.

S. T.

#### Sheep.

THE PROBLEM OF THE DIMINUTION IN THE STOCK OF SYRIAN SHEEP. — In consequence of the unfavorable weather conditions of 1931-32 the census of the Syrian sheep taken in the spring of 1932 showed a diminution of 21.30 % to the total stock. E. ACHARD, writing in the *Union Ovine* (Paris 1933, Vol. V, No. 1, p. 20), gives various reasons why there should be no appreciable increase in numbers in the two following years, but rather a further reduction. For example, a great number of the ewes have not had enough milk to feed the lambs so that they could withstand the rigours of the 1931-32 winter. The rams have been greatly reduced in weight by the short-

tage of water and fodder and have been less active than in normal times, with the result that many ewes have not been served. And it is to be feared that even in the case of pregnant ewes their physiological condition will be such that there will be a large number of abortions and rachitic lambs which cannot be saved owing to inadequate food.

S. T.

## Agricultural Industries.

### Industries of Plant Products.

MALT PRODUCTS AND BEAN MEAL IN WHEAT FLOURS. — The addition of small quantities of barley malt (generally 0.2 %) or malt products and of bean meal (maximum 4 %) to wheat flour for use in baking is tolerated by the French Government and regarded as the normal procedure in cases in which the local flours are used which are poor in gluten and give slow fermenting doughs and insufficient colour to the crust. (*De Blé au Pain*, Paris 1933, n. 3).

G. S.

INFLUENCE OF FERTILISERS ON THE RELATIONSHIP BETWEEN THE INORGANIC CONSTITUENTS AND THE SACCHARINE CONTENT AND PURITY OF SUGAR BEET. — See p. 524.

ADVANTAGES OF THE EARLY ARTICHOKE FOR THE SUGAR (LEVULOSE) AND ALCOHOL INDUSTRIES. — See p. 523.

THE TUNG OIL INDUSTRY IN THE UNITED STATES (1). — This oil is obtained from the seeds of *Aleurites Fordii* which was introduced into the United States by the Government Department of Agriculture in 1905. It was not planted to any great extent however until 1924, when the home grown seed began to supply the oil industry regularly. In recent years the industry has been so successful, as reported in *Tropical Agriculture* (Trinidad, 1933, Vol. X, No. 9), that the crop is being extended still further to meet the demand for the oil. The oil is highly siccative and has a number of uses: paints and varnishes, specially for aeroplanes — water-proofing of materials — manufacture of insulating materials — manufacture of linoleum — synthetic resins — compounds for electric cells — etc.

### Industries of Livestock Products.

IS DECOLORATION IN THE REDUCTASE TEST A FUNCTION OF THE BACTERIAL CONTENT OF MILK? — W. DORNER, of the Federal Dairying and Bacteriological Establishment at Liebefeld-Berne (*Le Lait*, n. 125, 1933), has made a study of the reductase test as compared with bacterial count in the determination of the quality of milk delivered at Swiss cheese factories.

The analyses of 784 milk samples supplied by 61 producers carried out in the course of one year at a Gruyère cheese factory showed that more than 2/3 of the samples had a bacterial content under 50,000 and that 9/10 contained less than 100,000 per cubic centimetre. It is shown that although there is a correlation between the content in bacteria and the result of the reductase test, the correlation is not very close.

It is impossible to differentiate by means of the reductase test between milk samples containing 30,000 bacteria and those containing 80,000 or 90,000. The reductase test

(1) See also the article on Tung Oil in this Bulletin, 1931, No. 8, pp. 297-305.

therefore allows of recognising only the worst milks, without indicating the best. For a further grading a bacterial count, preferably by the BURRI process, is necessary.

E. G.

SEASONAL VARIATIONS AND THE ANNUAL CYCLE IN THE BUTTER INDICES IN NORTHERN FRANCE. — MM. POLONOVSKI and THOMAS have studied these variations and the annual cycle and have obtained the following results, which are reported in *Le Lait* (Paris 1933, n. 125).

The composition of the butters of northern France undergoes three types of variation : seasonal, several-weekly and individual, in direct or indirect correlation with alimentation. Most of the indices vary in the same direction. Dairy butters show the same variations as farm butters.

Low indices were frequently found for butters coming from inadequately nourished cows. These indices were even very greatly below the minimum values allowed for commercial butter. Such butter, though pure, has all the appearance of butter to which margarine has been added ; it has also a lower food value. The writers recommend farmers to feed the cows adequately to obtain butter of normal value.

E. G.

METHODS OF PREPARATION AND MAINTENANCE OF STARTERS FOR CHEESEMAKING. — In *The New Zealand Journal of Agriculture*, Vol. 47, Nos. 2-3, 1933, MOIR G. M., gives the methods of preparing starters for cheesemaking. In the manufacture and ripening of cheese the starter organisms fulfil at least four functions : the first is to ripen the milk before renneting, the second is a continuation in the vat of the preliminary acid-production prior to setting, the third relates to the process of ripening in which the influence of the starter organisms is frequently not realised, the fourth is to restrain the growth of undesirable organisms.

In order to perform these four functions a good cheese starter should fulfil three requirements : (1) it must contain the right bacteria (a mixture of types of *Streptococci*, *S. cremoris* and *S. lactis* in varying amounts as well as a small proportion of *S. paracitrovorus* type); (2) it must possess vitality - i. e., must be capable of developing adequate acidity when used in a cheese-vat (the production of lactic acid is the main essential of a good cheese starter and as a rule the mixed milk of several cows in the herd is preferable to the milk of one cow alone) ; (3) it must be free from contamination (in addition to using milk produced under clean conditions the starter itself must be prepared under the cleanest possible circumstances).

The author deals with the care of starters : starter room, utensils, milk, inoculation, with the use of mother starters, failures and their causes and he shows that a series of operations must be carried out with due care and numerous precautions must be adopted if the starter is to be maintained in a condition of satisfactory vitality and freedom from contamination.

E. G.

THE INFLUENCE OF VARIOUS FACTORS ON THE TENDENCY OF CHEESE TO PREMATURE FERMENTATION. — In *Le Lait* (Paris 1933, n. 126-127), MM. HAGLUND, SANDBERG and BARTEHL report the results of research on the influence of various factors on the tendency of cheese to abnormal premature fermentation in the presence of considerable quantities of *Bacterium aerogenes* in the milk.

Premature fermentation can be completely prevented by adding lactic yeast to the milk. Too great quantities of this yeast however produce too low a pH value and give a crumbly consistency.

If saltpetre is added with the lactic yeast the amount of the latter may be reduced and the consistency of the cheese will be more satisfactory.

Pasteurisation of the milk at 63° C. for 10 minutes absolutely prevents abnormal premature fermentation caused by *B. aerogenes*.

Salting of curd in which this bacterium is present considerably increases the tendency to premature fermentation.

E. G.

### Agricultural Training.

THE ESTABLISHMENTS FOR AGRICULTURAL TRAINING AND RESEARCH IN SWITZERLAND (Die landwirtschaftlichen Bildungs-und Versuchsanstalten der Schweiz – Istituti per l'istruzione agraria e Stazioni agrarie sperimentali della Svizzera). — The Swiss association of agricultural teachers and experts has just issued a richly produced and prolifically illustrated volume of 168 pages containing valuable information on the important question of agricultural training and research in Switzerland.

The work consists of two parts; the first, containing 139 pages, is devoted to the teaching establishments, and the second, of 23 pages, to the research establishments. Part I includes the following chapters: — (A) General information (historical account, dates of the founding of the agricultural schools, illustrations of the schools) — (B) Advanced agricultural training — (C) The middle schools of agriculture (organisation, Cantonal agricultural training establishments in the Cantons of Zürich, Berne, Lucerne, Schwyz, Glaris, Zug, Fribourg, Soleure, Bâle-Campagne, Schaffhouse, St. Gall, Grisons, Argovie, Thurgovie, Tessin, Vaud, Valais, Neuchâtel, Geneva). Part II gives an account of the establishments devoted to agricultural research in Switzerland: — (A) Federal research establishments (Oerlikon, Liebefeld-Berne, Wädenswil, Lausanne) — (B) Cantonal research establishment (Auvier).

The text, which is mainly in German, but partly in French and Italian, is extremely accurate and clear. It gives a very fair idea of the great activity which has taken place in Switzerland to promote agricultural study.

It is highly desirable that similar publications should make their appearance in other countries. They complete in a very satisfactory manner the work which has been undertaken since 1930 by the Bureau of Agricultural Information of the International Institute of Agriculture. This vast directory to the establishments dealing with agricultural training and research existing in all the countries of the world is now in course of preparation, five volumes having already appeared, and a sixth being now in the press.

G. R.

### Agricultural Research.

INSTITUTE OF DAIRYING AND AGRICULTURAL MICRO-BIOLOGY ATTACHED TO THE COLLEGE OF AGRICULTURE OF VIENNA. — This Institute, which was founded in 1872, has the credit of being the oldest academic institution for dairying. The teaching staff consists of the Director, Prof. Dr. Adolf STAFFE, and 3 other permanent members. The activities of the Institute are directed more particularly to research relating to the formation of milk, bacteriology of milk and milk products, agricultural microbiology (water, soil and manure), stock feeds and the bacteriology of digestion.



The Institute has an experimental cattle farm at Schönbrunn, 2 chemical laboratories, 1 physical and 1 bacteriological laboratory, 1 dairying laboratory and other incubation rooms, refrigerator rooms, etc.

The research results are published in: *Milchwirtschaftliche Forschungen, Zeitschrift für Tierzüchtung und Züchtungsbiologie, Biochemische Zeitschrift, Molkereizeitung Hildesheim, Oesterreichische Milchwirtschaftliche Zeitung, Alpenländische Molkerei- und Käsereizeitung.*

The languages used are German by preference, also English, Spanish and Swedish.

E. G.

## Forestry.

CHARCOAL BRIQUETTES. — The use of these briquettes in place of coal for the warming of houses is increasing steadily with the constant improvement in the methods of their manufacture.

Since 1931 F. AUBERT, a Swiss forestry officer has had briquettes of powdered charcoal manufactured in France, which have been found more satisfactory than broken charcoal alike for gas engines and for house warming. In Austria there has been recently a marked development in the production of briquettes of this kind. Following on experimental work carried on over a period of years, an Austrian firm has succeeded in producing, with the aid of a special adhesive substance, charcoal with a specific gravity of 0.8, a heating power of 800 calories and a pressure resistance of 80-100 kg. per square centimetre. A Viennese factory converts daily into charcoal 20 cubic metres of beech and oak waste for making briquettes by a patent process requiring the services of two workmen only.

In Sweden steps are being taken to convert into charcoal 400,000-500,000 cubic metres of wood, being the debris of trees blown down by the great storm which occurred in Uppland in 1932 and to make briquettes of this charcoal. (See *Schweizerische Zeitschrift für Forstwesen*, Berne 1933, No. 6).

SLEEPERS OF ROBINIA WOOD. — Until quite recently *Robinia Pseudo-Acacia* wood has only been used quite exceptionally in the construction of railway sleepers although, as shown by G. FODOR (Hungary) in the periodical *Erdészeti Lapok* (Budapest 1933, No. XI, pp. 1,114-1,125) it is very well adapted for the purpose in consequence of its characteristics of elasticity, flexibility and resistance to pressure and laceration. The robinia belongs to the group of hardwood trees, which includes hickory and the best kind of larch and is harder than pedunculate oak, while its resistance to decay is superior to that of the majority of broadleaved trees. Its characteristic hardness, even when in contact with the soil, remains conspicuous; for example, according to FODOR, if in such conditions the oak has an average life of 16 years, the life of the robinia is 40. Robinia wood is not a good recipient of the chemical treatment which is used for sleepers made from other kinds of timber but in this case such treatment is not required since in its natural state it contains elements which make for resistance and durability. Unfortunately however this wood is very liable to crack, though this defect is met by clamping the two ends of the sleeper with iron bands.

A more serious difficulty is that, under the most general system of exploitation, i. e., the coppice system, robinia trunks are of small size, particularly as regards girth, so that a small percentage only reach the dimensions that make them suitable for normal gauge sleepers, though there are plenty of trunks available quite suitable for narrow gauge lines. This difficulty could be avoided by increasing the rotation period.

The economic value of robinia timber, especially in places where it is abundant, is indisputable, not only because the cost of sleeper production in this wood is not higher than for other species but also because its « life » when in contact with the soil is far higher than that of other kinds of timber.

G. I.

## BOOK NOTICES \*

### Tropical and Subtropical Agriculture.

*La Revue de Madagascar.* Tananarive, Imprimerie officielle.

A new quarterly publication, magnificently produced under the auspices of the Government General of Madagascar, the first number of which appeared in January 1933. It contains articles of very varied character dealing with all aspects of life in Madagascar. Articles of agricultural interest have included one on Rice (in N<sup>o</sup>. 2) and one on Coffee (in n<sup>o</sup>. 3).

### Animal Husbandry.

FINGER Emil, *Das egemalige K. u. K. Karster Hofgestüt zu Lippiza 1580-1920.* Laxenburg (Oesterreich) 1930, als Manuskript vervielfältigt. 63 p., 23 Tabellen.

This work (issued in typescript) is an interesting monograph on the Lippiza horse by the head of the old Austrian Imperial Lippiza stud. The author is in a position to supply valuable facts about the history of the stud and its geographical conditions. He describes the breeding methods and the characteristics of the Lippiza horse and completes the account with tables showing the pedigrees of the stud stallions and mares.

E. M.

*Index veterinarius*, published by The Imperial Bureau of Animal Health, Vol. I, No. 1, Weybridge, Surrey. 1933.

The Imperial Bureau of Animal Health publishes the first volume of an important work of documentation: the Index Veterinarius. This Index contains, in over 300 pages, the titles of several thousand articles and publications on veterinary subjects mostly taken from about 600 journals, the list of which is printed separately in the volume and constitutes in itself a valuable list of reference. The volumes will be issued quarterly, each being a complete alphabetical index, the author's names and subjects being given their appropriate places in the same series. The present issue, dated April 1933, covers the indexing done by the Imperial Bureau for Animal Health during the first quarter of the year. Each subsequent issue will deal with the indexing done during the corresponding previous quarter. Some introductory pages give important details on the method of classification and publication and directions for the use of the Index.

There is no doubt that this important work will prove extremely useful to all interested in animal health matters.

S. T.

\* Under this heading are included short synopses of books received for review.

## PUBLICATIONS RECEIVED BY THE LIBRARY

### Books.

#### *General.*

ST. GALLISCHE NATURWISSENSCHAFTLICHE GESELLSCHAFT. Jahrbuch. 66. Bd. Vereinsjahre 1931 u. 1932. St. Gallen, Zollikofer, 1932. 183 p.

SOCIETÀ ITALIANA PER IL PROGRESSO DELLE SCIENZE, ROMA. Annuario 1933, pubbl. per cura del Segr. della Società Prof. L. Silla, Roma, 1933. 268 p.

SOCIETÀ ITALIANA PER IL PROGRESSO DELLE SCIENZE, ROMA. Atti della Società italiana per il progresso delle scienze, pubbl. per cura del Segr. Prof. L. Silla. Ventunesima riunione. Roma, 9-15 Ottobre 1932. v. I-V. Roma, 1933. 5 v.

#### *General Agronomy.*

CAVADINI, L. L'arte del giardiniere : corso teorico-pratico di giardinaggio. Milano, Hoepli, 1934. XII, 311 p.

JAHRBUCH der Moorkunde. Bericht über die Fortschritte auf allen Gebieten der Moorkultur und Torfverwertung. Unter Mitw. zahlr. Fachgenossen hrsg. von Br. Tacke u. Fr. Brüne. 19. Jahrgang. 1931. Hannover, Schaper, 1933. 177 p.

RIPPEL, A. Vorlesungen über Boden-Mikrobiologie. Berlin, Springer, 1933. VIII, 161 p.

#### *Agricultural Research.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND. The farmer's guide to agricultural research in 1932. London, 1933. 236 p.

Ex : Journal of the Royal Agricultural Society of England. Vol. 94, 1933.

#### *Plant Protection.*

LÜSTNER, G. Krankheiten und Feinde der Gemüsepflanzen. 3. Aufl. Stuttgart, Ulmer, [1933]. VIII, 137 p.

NEAVE, S. A. The history of the Entomological Society of London, 1833-1933, assisted by F. J. Griffin... with a Financial chapter by A. F. Hemming. London, [Clay], 1933. XLVI, 224 p.

PAILLLOT, A. L'infection chez les insectes : immunité et symbiose. Trévoux, Patissier, 1933. 535 p.

SOCIETÀ ENTOMOLOGICA ITALIANA. Memorie della Società entomologica italiana. Vol. XII. 1933, Fasc. I. Genova, Arti graf. Commercio, 1933. 127 p. (Supplemento al no. 7 del Bollettino).

*Crops of Temperate Regions.*

BURR, S. and D. M. TURNER. British economic grasses. London, Arnold, 1933. 94 p.

CARVALHO E VASCONCELOS, JOÃO de. Trigos portugueses ou de há muito cultivados no país. (Subsídios para o seu estudo botânico.) Lisboa, 1933. 150 p.  
Ex: Boletín Agr., Ano 1, nos. 1 e 2, I Série.

DONNA, G. L'uva che risana. Milano, Hoepli, 1934. [XI], 132 p.

*Tropicales and Subtropical Crops.*

BOWKER, H. Lower production costs the key to cotton-belt prosperity. New York, The American Agricultural Chemical Company, 1932. 10 p.

CONFÉRENCE INTERNATIONALE DU CACAO, BRUXELLES, 1932. Compte rendu officiel. Bruxelles, Guyot, [1932?]. 170 p.

HÜBNER, G. Kautschuk, Eine wirtschaftsgeogr. Monographie. Berlin-Steglitz, Bodenbender, 1934. XVI, 258 p.

*Animal Husbandry.*

AXELSSON, J. Den svenska husdjursavels utveckling från 1800-talets början fram till våra dagar. Lund, A.-B. Skånska centraltryckeriet, 1933. 340 p.  
[The development of stock farming in Sweden from 1800 to the present day].

CLAUSEN, Hj. Die Futterverwertung der Milchkühe bei verschiedener Ernährung und Leistung. Hannover, Schaper, 1933. 61 p. (Arbeiten der Deutschen Gesellschaft für Züchtungskunde. Hft. 61).

ROMA. ISTITUTO SPERIMENTALE ZOOTECNICO. Annali. v. 1. Roma, Artero, 1933. 403 p.

UNION DES MARCHANDS DE SOIE DE LYON. Statistique de la production de la soie en France et à l'étranger. Soixante-deuxième année. Récolte de 1932. Lyon, Rey, 1933. 39 p.

*Forestry.*

ANTONELLI, G. Nozioni di economia forestale. v. 1: Dendrometria. Estimo. Torino, Paravia, [1933]. 342 p. (Biblioteca agricola.)

SKOGALMANAKK 1933. Sekstende årgang. [Éd.] J. Nygaard. Oslo, Grøndahl, [1933]. 336; 76 p.  
[Forest almanac].

*Agricultural Engineering.*

DAVIDSON, J. B., G. W. MCCUEN, R. U. BLASINGAME. Report of an inquiry into changes in quality values of farm machines between 1910-14 and 1932. St. Joseph, Mich., American Society of Agr. Engineers, 1933. 165 p.

HOMANN, R. u. W. FAUTH. Siedlungsbau und Selbsthilfe. Eberswalde-Berlin, Müller, 1932. VIII, 168 p.

SOCIETÀ PER LA BONIFICA DEI TERRENI FERRARESI E PER IMPRESE AGRICOLE, ROMA. Assemblea generale ordinaria e straordinaria degli azionisti convocata il 30 Genn. 1933. Roma, Angeletti, 1933. 27 p.

*Various.*

BOTANICAL SOCIETY OF EDINBURGH. Transactions and proceedings. v. XXXI, part II. Session 1932-33. Edinburgh, Neill, 1933. p. 245-322.

FORTSCHRITTE der Botanik. Unter Zsarbeit mit mehreren Fachgenossen hrsg. von Fritz von Wettstein. Zweiter Band. Bericht über d. J. 1932. Berlin, Springer, 1933. 302 p.

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(1) Previous list September 1933. To be continued March 1934.

(2) List of abbreviations: bihebd. (biweekly); bimens. (twice monthly); bimestr. (every two months); déc. (every ten days); étr. (foreign price); hebd. (weekly); int. (home price); irr. (irregular); mens. (monthly); n° (number); N. S. (new series); q. (daily); sem. (half yearly); s. (series); trihebd. (every three weeks); v. (volume); trim. (quarterly).

(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.

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# PLANT PROTECTION



# INTERNATIONAL BULLETIN OF PLANT PROTECTION

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## DISCOVERIES AND CURRENT EVENTS \*

French North Africa: The Desert Locust (*Schistocerca gregaria*) (1).

### ALGERIA.

- 1 April 1933 — Laying reported in the Oued en Nsi (50 km N. E. of Ghardaïa). A red and yellow swarm coming from the W. settled in the Oued M' Zab (5 km. W. of Ghardaïa). Departed on 3 April. Two large swarms settled, one 2 km to the N. of Khanga Sidi Nadji, the other at Si Boui Ahmed (Khenchela). Departed on the 2nd, flying W.  
Large swarms reported to the S. of the Douar Branes (Aïn-Touta). Copulation on 4 April.  
Two swarms settled, one at the Oued Bougour, the other at Ich ou Augak (Douar Aliennas, Khenchela). Copulation and laying.
- 2 " " — A swarm settled on 31 March at the Douar Madena (Frenda) flew away to the S. E.
- 3 " " — A swarm settled between Kaf el Guernâa and Oued Did (15 km N. E. of Ouled Djellal).  
A swarm settled at Ras Tachet (Khenchela). Copulation and laying.
- 4 " " — Two small swarms coming from the S. settled 5 km to the E. of Merrara (Touggourt).  
A swarm settled at the Douar Kangha Sisi Nadji (Khenchela) and laid over 20 hectares.  
A swarm settled at Oued el Melah, Douar Ouldja (Khenchela) and laid over 20 hectares.
- 5 " " — A swarm settled to the S. of the Douar Ouldja (Khenchela) and laid over 15 hectares.
- 6 " " — A small swarm settled near Bourguern (50 km N. of Mecheria) and laid over 5 hectares.  
A large swarm, coming from the E. settled at Hadjeret Salah, Douar Tadjemout (Arris). Laid on 8 April over 350 hectares.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

- 6 April 1933 — Laying reported to the S. of the Douar Tadjemout (Arris) over 3 km  $\times$  150 m.  
Laying at the Douar Taberga (Khenchela) over 25 hectares.
- 7 " " — Numerous swarms settled at the Douars El Outaya, Branis, Gueddiea and El Kantara (Aïn-Touta).  
Laying reported at the Douars Branis and El Outaya (Aïn-Touta).  
Laying reported at Khiaber, 150 km S. of Messaad (Djelfa) over about 100 hectares.  
A small swarm settled at Chedded, Douar Meguisba (60 km S. of El Ousseukh-Trézel).  
Laying reported at Titen Yaya and at Bedeau (Le Télagh) over 100 hectares and 10 hectares.  
A large swarm coming from the S. W. settled at 4 p. m. at El Hassi, Douar Bitam (Barika). Laid on the 9th over 400 hectares.  
A large swarm coming from the S. settled at Meleh between Oued Semara and Defila (Barika).
- 8 " " — A small swarm coming from the S. E. passed the Douars Menaa and Chir (Arris).  
A large swarm settled at Fehj el Ma, Douar M'Chounèche (Arris) and laid.  
A swarm settled at Oued Naâm (40 km N. of Ouled Djellal) and laid over 2 km  $\times$  400 m.  
A small swarm passed at 11 a. m. over Tadjertila, Douar Khémis (Marnia) flying E.  
A large swarm coming from the S. W. settled at 11 a. m. on the E. side of the Djebel Amar, Douar Bitam (Barika).  
Laying reported at El Ghaïcha (Aflou).  
A swarm settled at 5 km S. of Aflou.  
The swarm, reported at the Oued Chergui (40 km S. E. of Aflou) laid and flew away to the E.  
A small swarm coming from the S. E. settled at the Djebel Sfar (3 km S. E. of Barika) and laid over 600 hectares.  
A swarm settled at Chaabet El Bidhia (12 km W. of Ghardaïa). Laid over 200 m. and departed on the 9th.
- 9 " " — A small swarm coming from the S. settled near Biskra.  
Two large swarms coming from the S. W. settled at Hemaret Moussakh and Nebech, Douar Bitan (Barika). Laid on the 13th over 30 hectares.  
A small swarm coming from the S. W. settled at Daya, Douar Bitam (Barika).  
A very large swarm coming from the S. E. settled at Selaouine, Douar Bitam (Barika). Laid on the 11th over 100 hectares.
- 10 " " — Large swarms coming from the E. settled at Sidi Harab, Oum Sayoud and Tafesa, Douar Oulache (Aïn-Touta).

- 10 April 1933 — Serious laying reported at Douar Kimmel, El Outaya, Branis and Gueddila (Aïn-Touta).  
 Very large swarms coming from the S. settled at Hama Labibat, Nebka and Oued Lahmar, Douar M'Doukal (Barika).  
 Laying reported at various points 35 km to the S. S. E. of Guardaia.  
 Laying reported at Bedeau (Le Télagh).
- 11 » » — A small swarm coming from the S. E. settled at the Douar Segana (Barika) and departed towards the N.  
 A swarm settled at Rosfa (25 km S. of Aflou) and laid over  $1500 \times 200$  m.  
 A large swarm settled at Sidi Sliman (75 km E. of Geryville).  
 Departed on the 14th flying N.  
 Slight laying reported at the Oued Seba and the Oued Dine (20 km N. E. of Ghardaia).  
 Important hatching reported at Bir Bousbia, Djerara, over 2500 hectares, Bir Chibai, Oglet Messaba (20 to 35 km S. of Négrine-Tébessa).  
 Laying reported at the Douar Aliennas (Khenchela) over 100 hectares.  
 Laying reported at Enfidat Necer ben Belkacem, Douar Ouldja (Khenchela) over 200 hectares.  
 A very large swarm coming from the S. E. settled at Dayaet, Douar Bitan (Barika) over 14 km.  
 A very large swarm coming from the S. settled at the Douar M'Doukal (Barika) and laid over 700 hectares. Departed on the 13th flying N.  
 Large swarms coming from the S. settled at Oued Harnia and Djebel Siadi and Oued ben Youcef, Douar N'Doukal (Barika) covering 250 and 3000 hectares. Copulation and laying.
- 12 » » — A swarm coming from the S. settled at the Douar Metkaouak (Barika).  
 A swarm passed over the Douar Aïn Kelba (Barika) flying W.  
 Hatching at Fom Aïn el Guitoune, Douar Aliennas (Khenchela).  
 Laying reported near Ferkane (165 hectares), at the Douar Behiret el Arneb (100 hectares) and Bir Kbedama (400 hectares) (Tébessa).
- 13 » » — Laying reported at El Horchane (over 50 hectares, at Kaf Kidoum (over 600 hectares), at Oued Ghiboud (over 200 hectares). Douar Ouled Sidi Abid (Tébessa).  
 A swarm coming from the S. settled at Douar Aïn Kelba (Barika) and departed flying S. W.  
 Laying reported at Teniet and Tine, Fom Ezguag, Delaïet Salem (Barika) over 100 hectares.  
 A swarm settled at Marmala, Douar Djezzar (Barika) and departed flying N.

- 13 April 1933 — Isolated individuals carried by a S. wind reported at the Douar Ouled Moussa and Chemora (Aïn el Ksar).  
 A yellow swarm coming from the S. settled at 5 p. m. at Zenina (100 km W. of Djelfa).  
 A yellow swarm coming from the S. settled at 3 p. m. at Teniet Bent Salah (20 km W. of Messaâd).  
 The swarm reported at Bedeau since 23 March departed towards the N. E. and settled in the forest of Tanazizine (Le Télagh).
- 14 " " — A swarm coming from the S. settled near Selmane, Douar M'Sif (M'Sila).  
 A swarm settled in the regions of the Pins, Magenta (Le Télagh). Departed on the 19th at 2 p. m. flying N.  
 A swarm settled at Draa Remel, Douar Aïn Kelba (Barika) and laid over 100 hectares.  
 A swarm settled at Zebaret Messaouda, Douar Metkaouak (Barika) and laid over 300 hectares.  
 A yellow swarm coming from the S. settled at the Ksar Amra, 8 km W. of Aïn El Ibel (Djelfa) covering 600 hectares.  
 A yellow swarm coming from the S. settled at Hadjeb El Hemr, 20 km S. W. of Aïn El Ibel (Djelfa) covering 300 hectares.
- 15 " " — A small swarm coming from the S. W. settled in the evening at Tazourit, Douar Merouana (Balezama). Departed on the 16th at 1 p.m. flying E.  
 Laying reported at Ramlia, Douar Aïn Kelba (Barika) over 50 hectares.  
 Swarms settled at Cida, Logra Bia and 13 km N. W of Sidi Khaled (region of Ouled Djellal).  
 A swarm settled at Chohra, Douar Oulad Sliman (Bou-Saâda) and laid over 300 hectares.  
 A swarm settled near Batna. Departed on the 18th flying S.  
 A swarm coming from the S. settled at Djebel Said, Douar M'Doukal (Barika) and laid over 100 hectares.  
 Laying reported from 15 to 22 April at Djafa over 880 hectares and at Nedjaouia over 1000 hectares.
- 16 " " — Swarms settled at Douar Aïn Kelba (Barika) and laid over 1800 hectares.  
 A very small swarm passed Ras el Aïoun (Belezma) and flew S.  
 A swarm coming from the S. passed Coudiat Tesfa, Douar Hamma (Rhira) and flew away S.  
 A swarm coming from the S. settled at Feif, Ouled Hamida, Douar Ouled Addi Guebada (M'Sila) and laid over 3 hectares.  
 Laying reported at the Oulad Sisi Hamza, Oulad Mimoun Gueraba, Oulad Ali ben Ameer, and Oulad Sidi Naceur (Aïlou).  
 The swarm settled on 14 April laid at Ksar Amra, 8 km W. of Aïn El Ibel (Djelfa) over 300 hectares.

- 16 April 1933 — Hatching reported at Daïet Mira, to the S. of El Haouch (Biskra) over 50 square metres.  
Swarms settled at Chebket, Drabine and Oued Hania, Douar M' Doukal (Barika) and laid over 100 hectares.
- 17 " " — Somewhat large swarms settled at the Douars Magra and Berhoum (Barika) and laid over 300 and 200 hectares.  
Swarms settled at Douar Metkaouak (Barika) and laid over 55 hectares.  
Slight hatching reported in the Oued Sebest (40 km S. W. of Ghardaïa).  
A yellow swarm coming from the S. settled at 1 p. m. at Boudrie, 30 km E. of Sidi Makhlouf (Djelfa) covering  $6 \times 2$  km.  
A yellow swarm coming from the S. E. settled at midday at Tilsitt, 2 km N. W. of Seïar (Khenchela) and laid from 17 to 19 April.
- 18 " " — Hatching reported at Aïssa Goegogou (55 km S. E. of Ghardaïa).  
A large swarm coming from the S. passed at 3 p. m. over the Douar Yabous (Khenchela) flying N. E.  
Very dense hatching reported at Touïla, Foum Zarif, Aleb El Adjel, El Melah, El Haouich, Demtsa (between 4 and 15 km S. and S. E. of Négrine-Tébessa).  
Swarms coming from the S. settled at the Douar M'Cif (M'Sila) and laid in various places.  
Small swarms coming from the E. settled at the Douars Bou-Saâda, Ouled M'hamed, Elmebarek, Ouled Sisi-Brahim (Bou-Saâda).  
A swarm coming from the W. settled at the Douar Aliennas (Khenchela) and laid over 2 hectares.  
Hatching reported at Braâ Boucif, 6 km S. W. of Zanina (Djelfa) over 25 hectares.
- 19 " " — A swarm settled in the Oueds Bouguerah and Chabount, Douar Aliennas (Khenchela). Copulation and laying.  
A swarm coming from the S. settled at 6 a. m. at Oued Meklaza and Chalat E. Dalak (10 km from Seïar-Khenchela). Laid on the 20th and departed flying N.  
Laying reported at El Hiouhi, 20 km N. of Tadmit (Djelfa) over 20 hectares.  
Small swarm coming the W. (Morocco) settled at Machloubâ and Msaref, Douar Beni Bou-Saïd (Marnia) and flew W. (Morocco).  
Laying reported at Bir Oum el Idami (125 hectares) and Guelta Baten (100 hectares) (Barika).  
Laying reported at Ighlia in the valley of the Oued el Arab (Khenchela) over 25 hectares.  
A small swarm coming from the E. reported at the Douar Amrès (Sisi-Aïssa).  
Large swarms reported towards Slissen (Le Télagh).

- 19 April 1933 — Large swarms coming from the S. settled at the Douar Maâdid (Maâdid).  
 Hatching reported in the Oued Metlili (30 km S. W. of Ghardaïa, over 2 km.  
 A large swarm coming from the S. settled at Rous El Kebour, 25 km E. of Tadmit (Djelfa). Laid on the 20th over 100 hectares.  
 A swarm coming from the S. settled at the Douar Bou Taleb (Rhira) and laid.
- 20 » » — A very small swarm settled in the evening at Draa Mekla, Douar Ras el Aïoun (Bélezma). Departed on the 21st in the morning flying S.  
 Laying reported at Chabet Dib (10 hectares), Coudiat Dehbla (7 hectares), at the Douar Ouithène and at Sidi Brahim and Chegoufa (9 hectares), at the Douar Selmane (M' Sila).  
 A large swarm passed at the Douar M'Doukal (Barika) flying N.  
 Laying (exact date not known) reported at the Douars M'Chou-nèche (2900 hectares), Oulache (3000 hectares), Tadjemout (700 hectares), Kimel (2000 hectares) (Aurès).  
 Laying reported at Dakhla (500 hectares) and Reg (600 hectares) Douar Ouled Sidi Abid (Tébessa).  
 A very large swarm coming from the W. passed over the N. of the annex of Laghouat, flying E.  
 Swarm reported in the Douar of Taouzient (Khenchela), flying N.  
 A swarm coming from the S. E. settled in the Douar Ouled Asdi Guebala (M'Sila) and laid at various points.  
 A large yellow swarm coming from the S. settled at Mekam Hadj Abdelkader, 7 km N. E. of Zenina (Djelfa) covering 3 × 3 km.  
 Laying reported at Aïn Roumia, Sed Oulad Bloul Zeira near Aïn el Ibel (Djelfa) over 150 hectares.  
 A swarm of some size settled at the Douar Ouled Chellih (Aïn Touta) and flew away towards the N. E.  
 A somewhat large swarm settled at Dit Ahmed ben Hadj Douar el Ksous (Aïn-Touta) and flew S.  
 Two swarms settled at Ouzrir Tagrout and Aourirt, Douar Tahament (Aïn-Touta), copulated and laid.  
 A swarm coming from the S. settled at Oum Latem, Douar Hamma (Rhira) and flew away S.  
 Laying reported in the Douars Barika (400 hectares) and Magra (1600 hectares) (Barika).  
 Hatching reported at the Djebel Halleb and Oued Enn Sigha, 10 and 15 km from Seïar (Khenchela).  
 Hatching reported from 20 to 25 April at Tirimbou, Aïdoul, Tagzirt, Chaba el Hamra, near Khanga Sidi Nadji (Khenchela).



- 20 April 1933 — General hatching reported in the region of Négrine (Tébessa).
- 21 " " — Very large swarms reported between Biskra and Touggourt (Biskra) flying N. N. W.  
 Large swarms coming from the E. settled in the Douars N' Gaous and Cosbate (Barika).  
 Laying reported at El Ateuf Gharbi, 5 km W. of Zenina (Dijelfa) over 50 hectares.  
 A swarm settled at Sidi Rehab, Douar Bou Taleb (Rhira) covering 5 hectares.  
 Much hatching reported in the region of Boudoukhane (Khenchela).  
 Laying reported at the Douars Ouled Chelih (40 hectares), Victor Duruy (30 hectares), Tahanent (500 hectares), El Ksour (Ain Touta).  
 A large swarm settled at the Djebel Groun (Ain-Touta).  
 A small swarm passed Mac Mahon (Ain Touta) flying N. W.  
 A swarm settled at Anza Sedira, Douar Oued Taga (Aurès).  
 Laying reported from 21 to 24 April near Khanga Sidi Nadji (Khenchela).
- 22 " " — Hatching reported at Hir Rebit (45 km N. E. of Ghardaïa).  
 Hatching reported at Frest el Bir (30 to 40 km N. Ghardaïa) of eggs reported on 22 March.  
 Laying reported in the Douars Barika (50 hectares) and Metkaouak (13 hectares) (Barika).  
 A swarm settled in the Douar Temchit (Batna) over 10 hectares.  
 A swarm coming from the S. E. settled at the Douar Bou Hamadou (M' Sila) and laid over 3 sq. km.  
 A swarm coming from the E. settled at Foum Zita, Douar Oulache (Arris).  
 A large swarm coming from the W. settled at the Douar Bouzina (Arris) and laid on the 25th at Draa Ras over 600 hectares.  
 Laying reported at Koudiat Ez Zaït, douars Hassaonas, Gherabas and Cheragas, over 4000 hectares (Saïda).
- 23 " " — A large swarm coming, from the S. E. passed over Ras el Aïoun (Belezma) and flew S. W.  
 A swarm coming from the S. circled above the Douar Ouled Si Mancor (Ain El Ksar) and departed at 4 p. m. towards the S. A few isolated individuals remained on the ground.  
 A swarm coming from the W. (Morocco) settled at the Douar Thalsa des Beni-Ouassine (Marnia), left on the 24th to settle again 7 km W. of Marnia, covering  $3 \times 2$  km. Some copulation.

- 23 April 1933 — A swarm coming from the S. E. settled at Bir Khobana (M' Sila) and laid over 50 hectares. Departed to settle again at Chott Banoiu (M' Sila) where it laid over 40 hectares. Flew towards the N. E. to settle again at Bir Souid (M' Sila). A swarm settled at Boukhemissa (M' Sila). Laying reported at the Douar El Kantara (Aïn-Touta) over 100 hectares. Swarms settled in the N. of the Mixed Commune of Aïn-Touta laid over 1000 hectares.
- 24 " " — Large swarms settled at the Douars Maâdid (over 10000 hectares) and Mekarta (over 2000 hectares) (Maâdid). Copulation. Hatching reported in the regions of Négrine and Ferkane (Tébessa). A swarm settled at the Douar Ouled Tebeu (Rhira) and dispersed in flying away. A swarm settled at Chergui (Aïn-Touta) over 30 hectares. A very large swarm coming from the S. settled to the N. of the Douar Djemmora (Aïn-Touta). Copulation. A small swarm settled at Guerouagu, Douar El Ksour (Aïn-Touta). Copulation. A swarm coming from the N. W. passed Mac-Mahon (Aïn-Touta) at 1 p. m. flying S. E. Laying reported at Ben Nour, Chabet Temaskilte, Draa el Kharfane, Kef Tir (Aurès) over 550 hectares. Laying reported in the Douar Bouzina (Aurès) over 30 hectares. A swarm coming from the S. settled at the Douar Taglaït (Maâdid) and laid over 20 hectares. Laying reported at the Douar Maâdid (Maâdid) over 50 hectares. Laying reported at the Douars Oulad Khaled (1100 hectares), Roumana 100 hectares), Ouled Ahmed (100 hectares), Oulad Sidi Ziane (600 hectares) (Bou-Saâda). Swarms reported in the Douars Tadjemout and Mezaourou (Slissen). Laying reported in the Douars M'Doukal (1,250 hectares), Berhoum (900 hectares), Magra (1050 hectares (Barika). A small swarm coming from the S. W. settled at Mechta Bouari, Douar Marcounda (Bélezma) and flew S. W. Hatching reported from the 24th to the 26th at Djiret El Tmar, El Dahak, Djield, Mekhazen, Oued Gharghar, near Seïar (Khenchela).
- 25 " " — Laying reported at Ras Logabi, 5 km S. E. of Doucem over 800 × 300 m, Noumeur, 12 km E. of Doucem over 700 × 300 m, Oued El Ozen, 10 km E. of Doucem over 600 × 200 m, (Ouled Djellal).

- 25 April 1933 — Laying reported at Marguebetir and Foum et bab, Douar Bou Thaleb (Rhira) over 10 hectares.  
 A swarm settled at the Douar Beni Ouassine (Marnia) flew away and settled near Marnia.  
 A swarm coming from the E. settled at El Ghaba and Lebehil, Douar Saïda (M'Sila) and laid over 60 hectares.  
 Laying reported at Oued el Ach, 25 km S. W. of Sidi Khaled over  $4 \times 1$  km; Kharchfi, 31 km W of Ouled Djellal over  $2 \times 0.500$  km; Djouf, 6 km N. of the Puit Rebih over  $1 \times 0.500$  km (Ouled Djellal).  
 A small swarm coming from the S. W. settled near Ampère. Departed on the 26th at 4 p. m. flying S. W.  
 A small swarm coming from the S. W. circled over El Madher (Aïn-el-Ksar) for 3 hours and flew S. W.  
 Laying reported at Chouf Sebaa (225 hectares), Douar Berhoum; at Mermar (3 hectares), Douar Barika; at Feidj Remel Lebtaba and Djerat Oued Barika (12 hectares), Douar Djazzar; at Oualjet Kef Saman Hormlia (15 hectares), Douar M' Gaous (Barika).  
 A large swarm coming from the S. passed over Douar M'Douka (Barika).  
 Swarm coming from the E. settled and laid at Baniou over 14 sq. km and Bahouasse Debabsa over 10 sq. km, Douar Saïda (M'Sila).  
 A swarm settled at Zelzala and Araoh (Slissen).  
 Laying reported at Ouled Mimoun Gheraba, Ouled Sidi, Hamza, Ouled Ali ben Ameer (Aflou).  
 A large swarm coming from the S. passed over Douar Yabous (Khenchela) flying N.  
 Very large swarm coming from the S. E. reported at the Douar Selamates (Sidi-Aïssa).  
 26   "   "   — General hatching in the region of Seiar (Khenchela).  
 A swarm coming from the S. settled at the Douars Bou Thaleb and Hamma (Rhira) and laid.  
 A swarm coming from the S. passed over the Douar Tanzaret (Rhira) flying N.  
 Swarms coming from the N. settled at the Douars Oued Abdi and Menaa (Aurès).  
 Laying reported at Draa Laghbar (25 hectares), Douar Barika, and Chabet Guelia, Draa Sba, Argoub Lakil, ben Seghir, Rakbat Larais el Melab (130 hectares), Douar Magra (Barika).  
 A swarm coming from the E. settled at the Douar Sidi Hadjeres (Sidi-Aïssa).  
 Swarms reported at the Douar Briket (Aïn-Touta).  
 Laying reported at the Douars Taglaït (50 hectares) and Mekarta (300 hectares (Maâdid).

- 27 April 1933 — Swarms reported at Tifakhssit, Chebket Saïdaa, Chebket Guers, Oued Hamman, Oued Khelidj and Guelbbour laid over 26 hectares (Barika).  
 A rather large swarm settled at Djebel Metlili, Douar Tillatou (Aïn-Touta) and laid.  
 Laying reported at Djebel Groun (Aïn-Touta) over 200 hectares.  
 Large swarm reported at the Douar Oulache (Aurès).  
 A large swarm coming from the S. settled at Bouzerine, Douar Tighanimine (Aurès) and laid over 100 hectares.  
 Swarms coming from the E. settled and laid at Khelidj Sfer Latouta, Kef Drabine, Douar Seggana (50 hectares) and Feidj Rih, Douar Sefiane (25 hectares) (Barika).
- 28    »    »    — Serious laying reported in the Douars Selamates and Hadjères (Sidi-Aïssa).  
 A swarm coming from the S. passed at the Djebel Afoul (Sidi-Aïssa) flying N.  
 A swarm coming from the S. E. settled at 5 p. m. at El Ghouiba, Douar Megane (Chellala) over 20 hectares.  
 A swarm of 2 × 4 km coming from the S. settled at Djebana Hamza and Ras Begh dad, Douar Mégane (Chellala) flying N. E.  
 A swarm settled at the Douar Taguedid (Aumale) and laid at Oued el Hassi over 100 hectares.  
 Laying reported at the Douar Oued Sidi Abid (Tébessa) over 50 hectares.  
 A very large swarm passed at the Djebel Bougafer (Tébessa) flying N.  
 Laying reported at Tihamanine, Douar Ksour over 15 hectares, at Mechta El Kherza, Douar Maâdid over 150 hectares (Maâdid).  
 Swarm reported at Belfil, Douar Ksour (Maâdid).  
 A small swarm coming from the S. W. settled near Corneille (Belezma).  
 A small swarm coming from the S. W. settled at Toumiat, Douar Ras el Aïoun (Belezma) over 50 hectares and laid; left again at 10 a. m. flying W.
- 29    »    »    — Laying reported at Oued Louza (25 hectares), Douar Seggana, at the Douar Barika (60 hectares), at the Douar Djezzar (110 hectares); at the Douar N'Gaous (5 hectares) (Barika).  
 A small swarm coming from the S. settled near Bernelle (Belezma).  
 A swarm coming from the S. W. passed at the Douar Aïoun el Beramis (Saïda) flying N. E.  
 Swarms coming from the S. settled at the Douars Medjana and Mansourah (Bibans).

- 29 April 1933 — Hatching reported at the Douars Branis and El Outaya (Aïn-Touta).  
 A swarm settled at Seguettifa, Douar Kherabcha (M'Sila) and laid over 500 hectares.  
 Laying reported in the Djorf Baroud (Marnia).  
 A small swarm settled near the centre of Marnia. Left again on the 30th, flying S. W.
- 30 " " — A swarm coming from the S. settled about 5 p. m. between Dellys and Tigzirt over 10 hectares. Left again on 1 May at 11 a. m., flying S. W.  
 A rather large swarm coming from the S. E. settled in the Oued Chelif, Douar Djendel (Le Djendel).  
 A small swarm coming from the S. driven by a S. wind settled at Takrits, Douar Soumman (Soummam).  
 A small swarm coming from the S. passed at the Douars Mhamid and Oued al Abd (Cacherou).  
 Large swarms driven by a S. wind settled in the Douars Kef Lakdar Tirghane, Titteri (Ain-Boucif).  
 Swarms coming the S. W. passed at the Douars Megane, Serguine and Ouerg (Chellala) flying N. E.  
 Laying reported in the Beni Ouassine (Marnia).  
 A small swarm coming from the W. (Morocco) settled at Hechera el Djadj (12 km S. of Marnia) over  $\frac{1}{2}$  sq. km.  
 A small swarm settled near Zoudj-el-Beghal (Marnia). Copulation.

# TUNISIA.

- 11 April 1933 — Large swarm reported at Metlaoui, region of Tamerza.
- 14 " " — Large swarm reported at Feriana.  
 A yellow swarm coming from the W. settled at Shirat (100 km S. of Thela) and laid.
- 17 " " — A yellow swarm coming from the W settled at Ennaga (100 km S. of Thala) and laid.
- 19 " " — A swarm coming from the S. W. settled at 3 p. m. at Khan-guet Gouboul (75 km S. of Thala). Left at 5 p. m. flying N. W.
- 20 " " — A large swarm passed 80 km S. W. of Sfax.
- 21 " " — A yellow swarm 15 km in width coming from the S. W. passed at 10 a. m. 85 km S. of Tataouine flying N. E.  
 A small yellow swarm coming from the S. W. passed over Oued Bel Kricheb (45 km S. W. of Médenine) flying N. W.
- 28 " " — Swarms from the S. E. settled at El Achrat and Ras el Oued, Choumrassem, 30 km N. W. of Tataouine and laid. Hatching reported at Kenchir Trouiret (20 km S. of Ben Gardane).

## MOROCCO.

- 6 April 1933 — Laying reported in the region of Sidi Mimoun, Dar Caïd Bachir, region of Oudjda.  
Part of the swarms having laid at Sidi Mimoun, Dar Caïd Bachir, region of Oudjda, flew W. and S. W. and settled on the 8th at the Djebel Takroum, region of Oudjda.  
Copulation over 1200 hectares.
- 8   "   " — Part of the swarms settled at the Djebel Takroum left, flying towards Taourirt, region of Oudjda.  
A swarm coming from Moul el Bacha settled in the plain of Ouassa near Sakka, region of Taza.  
A swarm coming from the S. E. (Taourirt) crossed the Mou-louya and settled near Zireg (region of Taza).  
Swarms coming from the S. E. (El-Aïoun) were killed in the Spanish zone.
- 9   "   " — The swarms reported on the 8th at Ouassa and at Zireg departed and collected again into a swarm of  $10 \times 5$  km flying towards Djebel Fizane and settled again on the 10th at Cedra el Mehara and Tizi Ghebeune, covering the ground with other swarms from Griou Jou to Zag.
- 11   "   " — Two swarms of  $4 \times 3$  km and  $4 \times 6$  km settled near Camp Berteaux, region of Oudjda, and flew towards Sakka.  
Laying reported in the Oued Za to the S. E. of Taourirt, region of Oudjda, over 4,600 hectares.  
A swarm coming from the Beni-Snassen settled near Camp Berteaux, region of Oudjda.  
Laying reported at Camp Berteaux, region of Oudjda, over 1500 hectares.
- 12   "   " — Laying reported at the Djebel Metmat to the N. W. of El Aïoun, region of Oudjda, over 2000 hectares.  
A swarm settled in the plain of the Amgad, region of Oudjda, and laid over 2000 hectares.  
A swarm settled on the 8th at the Djebel Takroum, region of Oudjda, laid over 2500 hectares.  
Swarms reported on the 9th at Cedra el Mehara (W. of Camp Berteaux) departed on the 12th towards the S. W. and settled at the Djebel Guelb el Bour, region of Taza.  
Swarms reported on the 9th at Griouiou, Zag, Sounas departed flying S. S. W., invading from the 12th to the 16th the region of Zireg at the Oued Ouizert and the Djebel Tisinfelt, region of Taza.
- 16   "   " — Swarms circling round Sakka, region of Taza, flew away in a northerly direction (Spanish zone) and returned S.  
Swarms coming from the S. W. settled at the Oulad Hakkoune, region of Taza.

- 17 April 1933 — Swarms passed over Madenet flying towards Chebka 30 km S. W. of Sakka, region of Sakka.
- 18   "   "   — Laying reported at Oued el Âssas (15 km N. E. of Taourirt) over 400 hectares, at Cheif el Archa (4 km S. W. of Mestigmeur) over 400 hectares; on the côte 896 (25 km S. E. of El-Aïoun) over 200 hectares, region of Oudjda.  
The swarms reported in the region of Sakka, region of Taza, progressing towards the S. S. W.  
A swarm coming from the N. W. settled at Hassi Amedlane, region of Taza, and flew away again towards Hassi.
- 19   "   "   — A swarm coming from the N. E. settled at Tiamranine-Hassi, region of Taza. Flew S. W. on the 21st, then returned towards Hassi.
- 20   "   "   — A yellow swarm coming from the E. settled at Metroh, to the S. E. of El-Aïoun, region of Oudjda, and laid over 300 hectares. Flew W. on the 25th.
- 21   "   "   — A swarm coming from the N. settled in Hassi Guenbour, region of Taza. Departed on the 24th and settled again Sidi Amar.
- 22   "   "   — A swarm coming from the S. settled at Aïn Kikeb, region of Taza, and laid until the 25th.  
A swarm coming from the N. E. settled at Sidi Abderhamane, region of Taza.  
A swarm coming from the W. settled at Koudiet Taaleb, region of Taza.  
A swarm coming from the Moulouya settled at Zebouja, region of Taza, and flew away to the S. W.
- 23   "   "   — Two swarms coming from the Hassi and from Sidi Ameur settled at 4 p. m. at Boukalane, region of Taza. Laid on the 24th.
- 24   "   "   — A swarm coming from the S. E. settled at Sidi Ali ben Abdelkader, region of Taza.  
A swarm settled at Sidi Mohamed, region of Taza.  
Two swarms coming from the N. W. and N. E. settled at Telaoui, region of Taza and then flew S. W. A swarm coming from the N. settled at Aïn Kila, region of Taza and laid. Hatching reported at Sidi Bou Naga (E. of Marrakech).  
A swarm of  $1 \times 1.5$  km coming from the S. E. settled at Tirchine to the W. of Berkane, region of Oudjda.
- 25   "   "   — A yellow swarm coming from the N. (Spanish zone) settled at Tirchine to the W. of Berkane region of Oudjda uniting with that which settled the preceding day.  
Hatching reported over 2 hectares at the Beni-Moussa Latach, 2 km to the N. of the old Sidi Bouhouria-Aïn Sfa track, region of Oudjda.  
A swarm settled at Ouled Mohamed, region of Taza, flew S.

- 27 April 1933 — Hatching reported over 1 hectare near Sidi Ali Moudda, region of Oudjda.  
A yellow swarm coming from the N. passed over the E. outskirts of Taza flying S.
- 28   "       " — A swarm settled at Oued Islay, region of Oudjda, laid.  
A swarm coming from the E. settled to the W. of the Djebel Saïd, region of Oudjda and laid. Left on 2 May flying towards Sidi Moussa where laying began.
- 29   "       " — Hatching reported between Kraael Halloufa and Tanembourt (10 km to the N. of El Aïoun) and at Takyalet, Cheik el Aycha and Oued el Assas, 25 km S. W. of El Aïoun, region of Oudjda.  
A swarm settled at Hassi Ouenzga, region of Taza, flew towards the N. E.  
A yellow and brown swarm of  $3 \times 1$  km settled at Msoun, region of Taza.  
Laying reported at El Smar and Hassi, region of Taza, over 134 hectares.

**Algeria: The Moroccan Locust (*Doclostaurus maroccanus*) (1).**

- 12 April 1933 — A few egg-pods found at El Mecif, Douar Taïcha, Aumale.
- 15   "       " — Hatching reported in the region of Aïn Tiddès, Douar Sefioun, Le Télagh over 4 hectares.
- 28   "       " — Hatching reported at Afaïd el Ahmar, Douar Ouni el Djellil, Boghari over 5 hectares.
- 29   "       " — Hatching, not dense, reported at 14 km to the N. W. of Berthelot over 4 hectares.

**Egypt: Locust Report (2).**

During May 1933 the country remained free from *Schistocerca gregaria*, Forsk.

Late in the month (on the 28th) a sack full of *Anacridium aegyptium*, L. was collected on Acacia trees in a valley running into a small village in Esna district lying on the western bank of the Nile at latitude  $33^{\circ} 35'$  longitude  $25^{\circ} 17'$ .

The sudden appearance of such a small swarm of *Anacridium* is not of usual occurrence and is interesting to note.

The locusts were yellowish in colour and females' ovaries full of eggs.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

(2) Communication from the Director of the Entomological Section, Ministry of Agriculture, Egypt, to the International Institute of Agriculture.



**Eritrea: The Tropical Migratory Locust (*Locusta migratoria migratorioides*) (1).**

During May 1933 no swarm of the tropical migratory locust made its appearance in the Colony.

**Southern Rhodesia: Locust Invasion, 1933 (2).**

Monthly Report No. 5, April, 1933.

**1. *Nomadacris septemfasciata*.**

The great majority of the surviving swarms of this species have now attained maturity and flying swarms are traversing the colony in various directions. In most districts a few belated hatchings were still in the hopper stage at the end of the month.

Large swarms are reported as having entered the colony from the Mozambique Co's territory and some have left the colony in a westerly direction flying into Bechuanaland.

The flights do not appear to be definitely of a migratory character but the general drift appears to be westerly to northerly. A few movements in other directions are reported. Practically the whole of the colony except the extreme southern position is involved.

Newly matured fliers appear to keep to the same vicinity for about two weeks before making off. During this period they join up with other similar swarms.

**2. *Locusta migratoria migratorioides*.**

No specimen from swarms of this species have been received since April 4th and it is uncertain whether any remain in the colony. A few adults have been noted associated with swarms of the red species.

It is of interest that adults of this species confined in cages have assumed breeding coloration and have been observed mating. The ovaries also showed considerable development by the end of the month.

**3. Feeding.**

The newly matured swarms are reported as feeding voraciously.

**4. Parasites.**

Threadworms have been found in hoppers of the 4th, 5th and 6th stages and in adults in the Lomagundi district. It may be noted that this was the only district in which these worms were found in adults of the egg-laying generation in January.

(1) Communication from the official correspondent of the Institute, Dr. Rolando GUDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(2) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

## 5. Destruction of Hoppers.

The campaign has been prosecuted vigorously throughout the month but is now drawing to a close. Returns to date indicate that well over 100,000 swarms, large, medium, and small, have been destroyed by the Government operators and by farmers. Some of the swarms have been very large. It is estimated provisionally that the average amount of poison used per swarm destroyed is somewhere near 40 gallons.

A complete clean up of the swarms throughout the colony has been an impossibility, but the destruction achieved must undoubtedly be reflected in the present position. Unfortunately, with heavily infested states on three sides of the colony the position is still very grave and the outlook for next wet season is decidedly unfavourable.

## 6. Damage to Crops.

No serious losses of European crops have been reported during the month but damage to native crops has occurred in various districts. The native crops over a considerable portion of the colony have failed on account of drought and in these areas locust damage has not materially affected the position. Most of the crops in the areas where the rainfall has been sufficient have been protected but appreciable damage has been sustained in certain native reserves in this category.

The main maize crop is now sufficiently matured to be safe from damage from flying swarms but the outlook for winter crops is far from reassuring.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Germany.** — A Presidential Decree of 22 April 1933, relating to the protection of public health, with regard to plant protection and the commerce in fungicides, insecticides and poisons, authorises among others the Government to warn the general public or private individuals in order to protect them from possible harm caused by such products. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 6, S. 47).

**Germany (Province of Brandenburg).** — By Police Ordinance of 22 March 1933, which came into force on 2 April 1933, and concerned the control of potato wart disease [*Synchytrium endobioticum*], in the circumscription of Ostprignitz only varieties of potatoes resistant to wart disease and having received official recognition as such may be grown and only on land with a maximum extent of half a hectare. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 5, S. 38).

**Germany (Brunswick).** — By Decree of 25 January 1933 any owner or holder of elm trees who shall find his trees to be attacked by *Graphium ulmi* is obliged to report it to the competent police authority and to carry out the orders of the latter without delay. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin 1933, Bd. IV, Nr. 6, S. 220-221).

\* \* By Decree of 3 March 1933 owners and holders of land are obliged to destroy the inflorescences (capitula) of coltsfoot (*Tussilago farfara*) appearing in March and April.

The local police and forest police authorities will have the right of supervision and will ensure that the required destruction is carried out by the persons concerned. In the case of failure to comply within a specified time fixed by the police the persons concerned will be liable to penalties. In the case of repeated default the necessary work will be carried out by the police at the expense of the persons concerned. (*Ibid.*, S. 221-222).

**Germany (Lippe).** — The Government has published, dated 1 February 1933, instructions providing for the application of the Decree of 25 March 1931 concerning disinfection by means of violent poisons. These regulations define the exact rights and duties of the various medical and administrative police authorities.

A detailed text is established which is to serve as a public warning in places where hydrocyanic acid gas is used for purposes of disinfection. A form is given which should serve as a model for requests for permits to use violent poisons. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1933, Bd. IV, Nr. 6, S. 222-226).

**Germany (Mecklenburg - Schwerin).** — With a view to the protection of bees, by Decree of 1 February 1933 it has been forbidden to treat flowering fruit trees with arsenical products. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1933, Bd. IV, Nr. 6, S. 227).

\* \* By Decree of 20 February 1933 it has been made compulsory to clear thistles (*Cirsium arvense*) before their flowering period. (*Ibid.*, S. 227).

**Germany (Prussia).** — By Ministerial Decree of 4 March 1933 owners of pigeons must during the period from 1 April to 15 May prevent their pigeons from entering newly sown fields and gardens. Owners and holders of land and persons having a shooting license are authorised to regard as their own property any pigeons found in fields or garden during the period specified. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 5, S. 38).

\* \* A Decree of 10 March 1933 regulating the protection of animals and plants came into force on 1 April 1933. (*Ibid.*, S. 38).

**Germany (Schleswig - Holstein).** — By Police Ordinance of 27 March 1933 it is forbidden to plant or cultivate species of *Berberis* or any variety of *B. vulgaris* within a radius of 200 metres round cultivated fields. Plants of *Berberis* growing wild in the zone indicated must be destroyed. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 6, S. 47).

**Germany (Württemberg).** — The Ordinance of 14 August 1932 contains regulations providing for the application of violent poisons, similar to those adopted for the same purpose in Lippe [see above]. The present ordinance is also concerned with the use of ethylene oxide (T-gas). (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1933, Bd. IV, Nr. 6, S. 229-231).

**Uruguay.** — By Decree of 30 August 1932 departmental Commissions for the destruction of locusts [*Schistocerca paranensis*] have been formed in each of the departments of the Republic with the exception of Montevideo. When they are installed these departmental Commissions will proceed to appoint sectional and district Commissions for their respective jurisdiction. (*Ministerio de Industrias. Dirección de Agronomía. Publicación Mensual*, Montevideo, Enero-febrero de 1933, año VI, n.ºs 1-2, págs. 18 y 19).

\* \* By the Law of 18 October 1932 the sum of 100 000 'pesos' is allotted for the expenses of locust control. The national administrative Council has at its disposal also a sum not exceeding 50 000 'pesos' for assistance for farmers who having lost their whole crops have not the necessary means for their support. The grants will be distributed by the departmental Labour Commissions. (*Ibid.*, pág. 21).

\* \* By Decree of 20 October 1932 a central Commission for locust control was formed. (*Ibid.*, pág. 21).

\* \* By Decree of 22 December 1932 a Commission was formed for continuing the studies started by Dr. Franz Fielitz on *Coccobacillus acridiorum* for the destruction of locusts. (*Ibid.*, pág. 24).

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[*Puccinia triticina*].

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[Results of preliminary experiments with spores of *Bacterium ephestiae*, *Bact. cazaubon* and *Bact. gelechiae* No. 5 against larvae of *Gelechia gossypiella* in Egypt].

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[*Glysia ambigua*, *Polychrosis botrana*].

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[Practical handbook on the diseases and pests of the vine, olive, fruit trees, citrus trees, mulberry, cereals, and fodder, market, industrial and garden plants, with indications regarding methods of prevention and control].

PALLIER, ANDRÉ. La résine colloïdale comme mouillant et fixatif. *Comptes rendus hebdomadaires des séances de l'Académie d'Agriculture de France*, Paris, 1933, tome XIX, n° 15, p. 543-547.

[Results of experiments on the wetting and adhering capacity of copper sprays as a result of adding colloidal emulsion of colophane].

PAOLI, GUIDO. *Apion damryi* Desbr. (*Col. Curcul.*). *Bollettino della Società Entomologica Italiana*, Genova, 1933, vol. LXV, n. 5, p. 116.

[The larva of this beetle is very common throughout Liguria and feeds in the midrib of artichoke leaves].

# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### Algeria: The Moroccan Locust (*Doclostaurus maroccanus*) (1).

- 3 May 1933. — Scattered and sparse hatching reported at the Douars Aïoun-el-Beranis, Tircine, Hassasna Cheraga, Hounet (Saïda).
- 6 May 1933. — Small and sparse hopper bands reported at Dra Labiod; Ouled-Malah of the Douar Boughzoul; Feid-el-Ahmar of the Douar Oum-el-Djellil; Bir-Hamou of the Douar Ouled-Anteur (Boghari).
- 8 May 1933. — Small and sparse hopper bands reported at Oued-Aroua of the Douar M'fatha, at an altitude of 900 m. (Boghari).
- 9 May 1933. — Three sparse hopper bands reported at the Douar Séfioun (le Télagh) over 5 to 6 hectares each.
- 15 May 1933. — Small and sparse hopper bands reported at Sidi-Madani and Fidjelia of the Douar Siouf, at an altitude of 1200 m. (Boghari).
- 19 May 1933. — Adults, not grouped, reported at Nouvion (Clinchant). Sparse hopper bands reported at Port-aux-Poules.
- 30 May 1933. — Eggs, not grouped, reported at Feid-el-Ahmar, Douar Oum-el-Djellil (Boghari).
- 31 May 1933. — Adults, not grouped, reported at the Douar Cosbate (Barika).

### Algeria: The Desert Locust (*Schistocerca gregaria*) (1).

- 1 May 1933. — Hatching reported at the Douars Branis, El-Outaya, Guedilla and Djemmorah (Aïn-Touta).  
A swarm settled at Lechbour (Bordj-bou-Arréridj). Pairing.  
A swarm settled at the Douar Bousmza (Akbou).  
Swarms settled on 29 April at the Douars Medjana and Mansourak (Bibans) laid.  
A swarm settled at Haouch Bendjeken of the Douar Djendel (Djendel) and departed at 4 p. m., flying N.  
A swarm settled at Zaouia (6 km E. of Dellys). Left on the 2nd, flying S.  
A swarm passed over the commune of Azarga, flying N.  
A swarm passed over the commune of Dra-el-Mizan, flying N.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

A swarm 40 km in width, driven by a south wind, reported in the N. of the commune of Sidi-Aïssa, flying N.

Swarms reported at the Douars Beni-Mansour (over 2 hectares), Tikseriden (over 4 hectares), Sebka (over 6 hectares) in the commune of Beni-Mansour.

Sparse swarms, driven by a south wind, reported at the Douars Hellal, Ouled-Anteur, M'fatha, Ouled-Marouf and Chahbounia (Boghari).

Hopper bands reported at several points and particularly to the N. W. of the post of Ouargla.

Hatching reported at Chaabet Tiflalassine, over the S. W. slopes of the Raa Aïcha, and at Oued Guelbouna (Khenchela) of eggs reported laid from 25 to 28 March.

Hopper bands reported at Gigat-el-Hamra, on the trail of Khanga Sidi Nadji (Khenchela), from hatching reported 24 April.

Hatching reported at El-Khobna and El-Khomina (85 and 105 km S. W. of Ghardaïa).

Hatching from 1 to 3 May at Ach Ogab, Bouselghiouane, Oued-Malah, Igly, Oued-Arsat and Koudiat Ghoudi (Khenchela).

Hatching from 1 to 5 May at Tirimbou, Aidoul, Oued Melasseba, Tagsirt, Chaba-el Amra, Sklil Beida and Chabet Defla, near Khanga Sidi Nadji (Khenchela).

Hopper bands reported to the S. W. of Khanga Sidi-Nadji (Khenchela).

Hatching from 1 to 5 May at Diebel Boughezal and Magraoua, 20 km S. and S. W. of El Kantara (Aïn-Touta) of eggs reported laid from 4 to 9 April.

Hatching reported near Boudekhan (Khenchela).

Hopper bands reported at Oglat Tiodi and Oglat El Hamza, 12 and 22 km respectively from Boudekhan (Khenchela), travelling N.

Hatching in the region of Seiar (Khenchela) finished.

Hopper bands reported from 4 to 15 km from Seiar (Khenchela), travelling towards the N. and N. W.

Hatching from 1 to 3 May at Oued M'zab, 10 km S. E. of El Ateuf (Ghardaïa).

Hatching reported S. of Bou-Noua, 4 km S. E. of El Ateuf (Ghardaïa).

A swarm settled in the Oued-Eddous Valley (Bouira).

A swarm passed over Marnia in a westerly direction to settle on the Douar Beni-Ouassina, on the road from Marnia to Port Say. Pairing. Oviposition on 2 May.

Isolated locusts reported at the Douars Aokas, Beni-Amrous, Djoua, Bouandas, Beni-Hassain, Beni-Sagoual, Ifalène and Mansouriah, in the sand-hills along the coast (Oued-Marsa).

Isolated locusts reported on land belonging to the commune of Taher.

Isolated locusts settled to the S. of the Douar Aouzallal (Cacherou).

Departed on 2 May flying towards the S.

2 May 1933. — Swarms coming from the S. E. settled and laid at Touasa (over 4 hectares), Terf (25 hectares), Nehta (10 hectares), Zerouga (1 hectare), Mesdour (30 hectares), Ouled Sidi Amar (80 hectares) of the Douar Dréat (M'sila).

A large swarm, coming from the S. W., settled at Oued Abdi (Aurès).  
A small swarm, coming from the S., settled at Chemora (El Madher) and departed towards the S. E.

Swarms reported at Tifra and at the Douars Azrou, Beni-Oughlie, Ioudja (Sidi-Aich).

A small swarm, coming from the S., passed El Milia, flying N.

Swarms settled at the Douars Sidi-Brahim, Ouled-Triff, El-Main (Bibans).

A large swarm settled to the N. of Chellala des Adaouras (Sidi-Aïssa).

Laying reported at the Douar Tafraouat (Sidi-Aïssa).

A swarm settled at Tikoura, 23 km S. S. W. of Maillot (Beni-Mansour).

Swarms settled at the Douars Aïn-Hazem and Souflat (Aïn-Bessem). Copulation.

Hatching reported near Ferkane (Tébessa).

A small swarm settled at the Douar Djouïdat (10 km E. of Marnia).

Hatching reported at Bou-Adam, 12 km E. of Doucen, Oued el Ozen (14 km N. E. of Doucen) and Matina (11 km E. of Ouled-Djellal).

Many swarms, coming from the S. and E. settled on the Douars Ouled-Sidi-Brahim, Ouled-Amara, Djebel Cessaad, Ouled-M'hamed el Mebarek (Bou-Saada).

Laying reported at the Douars Ouled-Sidi-Brahi (over 300 hectares) and Ouled-M'hamed el Mebarek (100 hectares).

A small swarm settled near Palestro.

A swarm settled at the Douar Tachachit over 5 hectares.

A swarm settled near Marnia. Pairing.

A swarm settled at the Douar Tirghane (Aïn-Boucif). Pairing and oviposition on 3 May.

A large swarm settled at Ampère and flew towards the S.

Hatching reported at Oued el Atrous, 7 km N. N. W. of M'chounèche (Aurès).

May 1933. — Egg-laying reported at Laouïd and Foun Ouled Louar, Douar Gosbate, over 6 hectares (Barika).

A small swarm, coming from the S., settled near El Madher in the afternoon over 10 hectares, and flew towards the S. E.

A small swarm, coming from the S., passed the Douar Erriche (Dra-el-Mizan), flying towards the N. E.

A swarm settled at the Douar Oued Djenane (Aumale) over 40 hectares, laying over 9 hectares at Chouf Beïda and El Magtoufa.

A swarm settled at the Douar Serdoun (Aumale) over 200 hectares.

Swarms settled at Oued-Sahel, Douar Tiksirident (15 km E. of Maillot) over 100 hectares, and at Hammam, Douar Inch Edallah (13 km W. of Maillot) over 2 hectares (Beni-Mansour).

Hatching reported at Khechen er Rih, Guénira, Oued-Mya, Haoud el Hazan, Tarfaïa, El Oulrat (Ouargla) of eggs laid from 11 to 21 March.

Hopper bands reported at Daïa ben Dahoua (10 km N. W. of Ghardaïa), travelling in a S. E. direction.

A large swarm, coming from the N. E., settled in Oued Belam (Bouïra). Pairing and oviposition on 4 May.

A swarm settled on Ued-Sahel (Tazmalt) and laid. On 4 May it flew towards the S.

A small swarm, coming from the S. W., passed Aïn-Roua (Sétif) flying towards the N. E.

Swarms reported at Oued-Amaghir (Akbou) over an area of 7 km × 400 m.

A swarm settled in Oued-Sahel, Douar Aït-R'sine (Akbou).

4 May 1933. — A swarm coming from the S. settled on the Douar Bou-Taleb (Rhira), laid over 60 hectares and flew towards the S.

A swarm of 1 km settled at Aïn-Sefra. It departed on 6 May, flying towards the W.

A large swarm, coming from the N., settled on the Douar Oued-Berdi (Aïn-Bessem) and laid over 18 hectares.

Large swarms, coming from the E., settled on the Douars Ouled-Anteur, Tchegala and Sidi-Yacoub (Boghari). Pairing.

A small swarm, coming from the S. W., settled at Tabent el Haouia and Amar Ouled Si Ali (El Madher), and flew towards the S. W.

A swarm settled in Oued-Sahel, Douar Tigrine (Akbou).

Small swarms, coming from the S. W., settled at the Douars Khelidjène and Harbil (Le Guergour). Pairing and oviposition.

A swarm coming from the W. passed Douar Braham (Rhira) and returned towards the W.

Swarms coming from the S. passed the Douars Boughzoul, Oum-el-Djellil, Saneg (Boghari), flying towards the N. and N. W.

Swarms settled on the Douars Sidi-Zouikia (over 100 hectares), Hîn-Sazem (over 300 hectares), Errich (Aïn-Bessem). Egg-laying reported at the Douar Souflat (Aïn-Bessem).

Small swarms coming from the S. passed Boughzoul, Oum-el-Djellil, Saneg (Boghari), flying towards the N. and N. W.

Swarms settled on the Douars Sidi-Zouikia (over 100 hectares), Aïn-Hazem (over 300 hectares), Errich (Aïn-Bessem). Egg-laying reported at the Douar Souflat (Aïn-Bessem).

Small swarms coming from the S. passed Berrouaghia, flying towards the N. W.

A large swarm settled in the evening at the Douar Aouzalel (Cacherou). Pairing.

A small swarm settled at Boghar.

A swarm settled at Kerhane, Naït Ouakli and Tigherghar el Bougakal, Douar Tizzemth (Beni-Mansour), over 4 hectares.

Very large swarms coming from the E. passed or settled on the Douars Birine, Kef Lakdar, Tirghane (Aïn-Boucif) over 60 km.

Hatching reported at El Haes (25 km S. W. of Aïn-Defila), commune of Barika, of layings reported 10 April.

Hatching reported from 4 to 7 May at Ach Ogab, Bouselghiouane, Igly, Oued Malah, Tamarset and Mekseur, region of Ouldja (Khenchela).

A swarm coming from the N. passed Yakouren (Arasga) at midday, flying towards the S.

Hopper bands reported at Bou-Moussa, near Négrine (Tébessa), travelling towards the N.

May 1933. — A swarm coming from the S. E. settled at Tameto un et, Douar Dréat (M'sila), laid and flew towards the W.

Hatching reported at the Douars Bitam and M'doukal (Barika).

Dense general hatching reported at the Douars Brania, El Ouraya, Gueddila and Djemora (Aïn-Touta).

A large swarm passed Seddouk flying towards the N.

A swarm settled in Oued-Soummam (El Kseur) and laid.

A swarm settled near Takrita (Soummam).

Laying reported at Oued Bounafa (5 hectares), Oussissira (6 hectares), Bellevue (9 hectares) of the Douar Oussera, and at Batmat Chouf (25 hectares) and Oued el Hadjel (25 hectares) of the Douar Serguine (Chellala).

Swarms coming from the S. and S. E. settled at the Douars Aziz, Ouled Hellal M'fatha Siouf, Ouled-Anteur (Boghari). Pairing.

A swarm 3 km in length, coming from the N. W., passed Lavigerie (Djendel) at 4 p. m., flying S. E. and settling at Ouled-Ali (Douar Chrib) over 20 hectares.

A swarm settled at Sakamody (Arba) and flew towards the S.

A small swarm coming from the S. E. settled at Temchit (Batna) over 4 hectares.

A swarm settled at Oued-el-Ma, Douar Ouldja, over 5 hectares (Khenchela).

Swarms settled and laid at Oued Beder (over 3 hectares) and Sjaarir (over 1 hectare) of the Douar Mellagou (Khenchela).

Hopper bands reported at Oued Djerada, near Ferkane (Tébessa), travelling towards the N. E.

General hatching in the region of Boudekhan (Khenchela).

Hopper bands reported at Chaabet el Nizab (40 km N. of Ghardaïa).

Abundant hatching reported over 3 km E. of Ksar El Haouita (45 km S. W. of Laghouat) over 10 square km.

Hatching reported at Oued Bouguerour (Khenchela) of eggs laid 29 March.

Bands of hoppers of the 5th stage reported at Foun-el-Guitoune (Khenchela).

Hatching reported from 5 to 8 May in the region of Négrine (Tébessa).

Hatching reported at El Habel, Dissa and Dessa, M'choumèche, Douar M'choumèche (Aurès).

Hatching reported on 5 and 6 May at Tisdein, 15 km N. E. of Damoune, Douar Kimmel (Aurès) of eggs reported 11 April.

Hatching reported at Djebel Telezela, 3 km N. W. of Titen Yahia (Télagh).

A small swarm settled at Aïn-Tiddès, Douar Sefioune (Télagh).

Swarms settled at the Douar Kef Lakhdar (Aïn Boucif), copulated and laid.

Egg-laying reported near Marnia.

A swarm settled at the Oued Isser, near Thiers (Palestro) and laid over 100 hectares.

A small swarm coming from the N. passed Ben Chicao (Berrouaghia), flying towards the S.

- 6 May 1933. — A large swarm coming from the S. E. settled at Aïn Dèze, Douar Madena (Frenda) over 10 km and then flew N. W.  
 A swarm settled at Feid el Hattab, Douar Madena (Frenda).  
 A small swarm settled at the Douar Benian (Mascara mixte).  
 A swarm coming from the S. settled 3 km S. E. of Trolars Taza (Tenier el Haad), over 100 hectares.  
 Egg-laying reported over 200 hectares S., and 600 hectares N., of the commune of Sidi Aïssa.  
 Egg-laying reported at Lachoufalkou, near Bouïra.  
 Egg-laying reported 2 km E. of Berroughia.  
 A large swarm coming from the S. E. settled at Aïn Serafil, Douar Ghrib (Djendel) and laid over 100 hectares.  
 A swarm settled at Tifra (Soummam) and copulated.  
 Large swarms settled at the Douar Ikedjane (Soummam).  
 A small swarm settled at Oued Hamidou (Arba).  
 Hatching reported at Bouibatte and Nebka, Douar M'doukal (Barika).  
 Hatching reported at Aïn Larabi, 7 km. N. N. E. of Aïn Madhi (Laghouat) over an area of 350 square metres.  
 Egg-laying reported from 6 to 10 May at Nedah Firas (over 100 hectares), Koudiat Trab (over 200 hectares), Mezgoub (100 hectares), Teniet Tahna (200 hectares), Douar Oued Taga (Aurès).  
 Hatching reported at El Hassi Safra, Douar Bitam (Barika) of eggs reported on 7 April.  
 Hopper bands reported from 1 to 5 km N. and N. E. of Ghardaïa, travelling towards the S. and S. E.  
 Hatching reported from 6 to 10 May at Fed Sellah, Oued Rearab, Aïdoul near Khanga Sidi Nadji (Khenchela).  
 Hopper bands reported S. of Khanga Sidi Nadji (Khenchela) travelling towards the N.  
 Hatching from 6 to 12 May at Dakhla el Haouita (50 km S. W. of Laghouat).  
 Hopper bands reported at Oued Touzouz (4 km N. W. of Ghardaïa) travelling towards the S. E.  
 A small swarm settled at Souk-el-Tenine, Douar El Isseri (Palestro), over 3 hectares, copulated and laid.  
 Three small swarms settled at the Douar Guerrouma (Palestro).  
 Egg-laying reported at the Douars Djebel Messaad (100 hectares), Ouled Amara (100 hectares), Oulad Ameur Guebala (200 hectares), Oulad Ameur Dahara (100 hectares), Oulad Ghrib (200 hectares) belonging to the commune of Bou-Saada).
- 7 May 1933. — Swarms coming from the S. E. settled and laid at Sabaa Lahmar (over 2 hectares), Oum Sekka (1 hectare), Reghbet Boughelane (1 hectare), Ced El Djemaa (2 hectares), Douar Beni-Ilmane (M'sila).  
 Moderately large swarms coming from the W. settled at the Douar Tameksalet (Remeh) over 200 hectares. Pairing. Oviposition from 8 to 10 May.  
 A swarm settled at Garra, Douar Tiziret (Aïn-Bessem) over 150 hectares, and laid.



Egg-laying reported at Guetrine, Douar Mihoub (Aïn-Bessem) over 3 hectares.

Swarms coming from the E. settled at the Douars Ouled Auteur, Aziz, Ouled Hellal, and Siouf (Boghari). Pairing.

Very abundant hatching reported at Oued Bouniaguiguen, Aïn Madhi, the plain of Milok, El Haoutia, Tadjemout, Mekhalif Djorb (Laghouat).

Hatching reported at Bled Selaouine (50 km S. E. of Barika) over 2,000 hectares.

Hatching reported from 7 to 9 May in the region of Aïn-Defila (Barika).

Hatching reported at Oued el Ahmar, Aïn-Naïmia and Oued Smar, Douar M'doukal (Barika) of eggs reported laid from 7 April.

Hopper bands reported at Bekkoucha, Ignediane, Azeb, Charghar, from 3 to 16 km from Seïar (Khenchela), travelling N. N. E. and N. W.

Hatching reported 7 and 8 May at Bennour and Kef Tiour, Douar Kimmel (Aurès) of eggs reported laid from 20 to 22 April.

Hatching reported from 7 to 10 May at Tisdein, 15 km N. E. of Dermoune, Douar Kimmel (Aurès) of eggs reported laid from 11 to 24 April.

Hatching reported 7 and 8 May near Négrine (Tébessa).

May 1933. — A swarm coming from the S. F. settled at Ouled Sidi-Amor, Douar Dréat (M'sila) and laid over 300 hectares.

Hatching reported in the commune of Aflou.

A large swarm settled and laid at the Douar Oued Taga (Aurès) over 400 hectares.

A swarm settled in the valley of Oued Taslent, Douar Igbran (Akbou) and laid over 25 hectares.

A swarm settled at the Douar M'ciama (Akbou) over 15 hectares.

Swarms settled at Douars Beni Oughlis, Tifra and Ikedjane (Soummam), copulated and laid.

Hatching reported at Bordj Senoussi, Mekafir, Bouchaker and the Prise d'Eau (environs of Laghouat).

Sparse hatching reported at El Hamar Labiod, 5 km E. of Nebah Eddib (Barika).

Hatching reported at Hamia Nekka, Bouibet, Oued Chergui, Oued Azlef, Douar M'Doukal (Barika) of eggs laid on 7 April.

Hopper bands reported at Oued el Atrous, 7 km N. N. W. of M'chounèche (Aurès), the hatching of which was reported on 2 May, travelling towards the S. E.

A swarm settled at 8 a. m at Berkoukia Djouidat (4 km E. of Marnia).

Hopper bands coming from the S. reported at Oglat Trodi and Oglat el Hamza, 12 to 25 km S. of Boudakhane (Khenchela), travelling N.

Hatching reported at Igly, Tamanit, Tabaalit, Oued Melah, Oued Arsat, Mekseur, 1 to 15 km from d'Ouldja (Khenchela).

Small swarms settled near Berroughia.

Hopper bands reported in the region of d'Ouldja (Khenchela).

Egg-laying reported at the Douars Rebaïa, Retab, Mongornou, Ouled Deid, Ouled Chair, Ouled Seghouane (Berrouaghia).

- 9 May 1933. — A small swarm settled at Harchaïa (20 km S. of Méchéria), laid over 2 hectares and flew towards the E.  
 Egg-laying reported at Teniet Talma, Douar Oued Taga (Aurès) over 200 hectares.  
 A swarm coming from the E. settled near Moudjebeur, Douar M'fatha (Boghari). Departed 10 May, flying towards the N. W.  
 A large swarm passed Sidi Mimoun (Saïda), flying towards the N.  
 Egg-laying reported at Aïn-Dèze, Gaouzem Toucha, Douar Madena, and Feid el Hattab, Mackouir, Gaouzem Zerkour, Douar Ghouddi (Frenda).  
 A swarm coming from the S. settled at the Douar Benian (Mascara mixte) over 15 hectares.  
 Egg-laying reported in the Oued Eddus (Bouïra) over 300 hectares.  
 A swarm coming from the W. settled at the Douar Ouled Bou Arif (Aumale) over 10 hectares. Pairing.  
 A swarm settled at El Kharet, Douar Oued Djenane (Aumale).  
 A large swarm coming from the S. settled in the Oued Chélif, at Aïn-Serafil, Douar Ghrib (Djendel). Pairing.  
 General hatching reported at the Douars El-Outaya, Branis, Gueddila, El Kantara (Aïn-Touta), beginning from the Douar Aïn-Zatout.  
 A moderately large swarm settled near Taourirt, Douar Fenaïa (Soummam).  
 Large swarms settled at Douars Drabila and Beni-Maoujhe (Guergour) and laid.  
 Small swarms reported at the Douars Beni Ourtilane, Beni-Chebana and Tala Hacène (Guergour).  
 Hatching reported at Seridja (7 km E. of Laghouat) over 1 square km.  
 Hatching reported at El Ghicha, Kherfa and Naia (S. W. of Aflou).  
 Hatching reported from 9 to 15 May at Chabet el Abed and Berkoukia, Douar Djeuidat (18 km N. E. of Marnia).  
 Hatching reported 9 and 10 May at Nebka, Bouibat, Oued Lahmar, Douar M'doukal, and El Hassi Safra, Douar Bitam (Barika), of eggs reported laid on 7 April.  
 Hatching reported at Khenig Sekoum, Douar Behroum (Barika).  
 Moderately large swarms reported in the valley of the Oued Eddous (Bouïra).  
 Small swarms coming from the S. and S. E. settled at Rebaia and Oued Seghouane (Berrouaghia) and laid in the ravines.  
 Hatching reported in the regions of Titen Yahia and Bedeau (Télagh).  
 Egg-laying reported at the Douars Oulad Ameur Dahara (over 5,000 hectares), Djebel Messaad (30 hectares), Roumana (600 hectares), Sou-Saada (200 hectares) of the commune of Bou-Saada.
- 10 May 1933. — A swarm coming from the S. settled at Teniet Benkerfa Douar Ouitlène (M'sila) and laid over 50 hectares.  
 A moderately large swarm, coming from the S. E., settled in the valley of the Chélif, 7 km N. of Duperré. Pairing and oviposition on 11 May.  
 Swarms settled at El Maherna, Douar Ouled Djenane and Ramal, Douar Ouled Ferha (Aumale).  
 Swarms settled and laid at Boghar.

A large swarm, coming from the S. E., passed Lavigerie (Djendel) in the morning for 2 hours, flying towards the N. W.

Swarms settled in the valley of the Soummam (Soummam), copulated and laid over  $6 \times 50$  km.

Hopper bands reported at Nebka Bouibat, 3 km E. of M'doukal (Barika), travelling towards the N. W.

Very large hopper bands reported 3 km S. of Négrine (Tébessa), travelling towards the N.

Large hopper bands coming from the S. reported at Bled Izaouen, Kef el Dab, Chabet Batta, Chabet Darmabt, Foum Chabba, Region of Seiar (Khenchela).

Much hatching reported 9 km S. of Nebek Eddib (Barika).

Hatching reported at Chaabet Datmane and Tifalassine, region of Djellal, (Khenchela) of eggs reported laid on 13 April.

Hopper bands reported in the region of Seiar (Khenchela) travelling towards the N. N. E. and N. W.

A sparse swarm coming from the W. settled at 5 p. m. at Takbalet (Montagnac). Laid on 11 May.

Hopper bands reported at 3 km S. E. of Ghardaïa, travelling S.

Hatching reported from 10 to 13 May in the region of Négrine (Tébessa).

Hopper bands coming from the S. W. reported at Hassi Saïf and Daïat Leck, Ouled Djellal, travelling towards the N. E.

11 May 1933. — Hatching reported at the Douar Bou Hamadon (M'sila) of eggs laid 22 April.

A moderately large swarm passed 13 km. from Miliena, flying towards the N. W.

A swarm settled in the region of Levacher (Braz). Departed on 12 May at 10 a. m. flying towards the W.

A swarm settled at the Douar Aouzalel (Palikao) and laid.

A swarm settled at Takbalet (Montagnac) over 45 hectares.

Swarms settled near Bertville and also at the Douars Sidi Zouikia and Metennane (Aïn Bessem), and laid.

A swarm reported in the region of Damiette.

A swarm coming from the S. settled at the Douar Ouled Tebben (Rhira) and laid over a length of 500 m.

Egg-laying reported over 100 hectares in the Oued-Soummam (El-Kseur).

Egg-laying reported over 10 hectares in the Oued-Amisour, near Bougie.

Hatching reported at Delza and Madher el Ournik (70 km. S. E. and 25 km S. S. E. of Laghouat).

Hopper bands reported E. of the Ksar of Guerrara (80 km E. N. E. of Ghardaïa), travelling towards the W.

Hatching reported 12 km. S. W. of Aïn-Hadjar (Barika).

Hatching reported from 11 to 13 May 5 km. N. E. of Barika of eggs laid April 17.

Hatching reported at Djerat el Hamama, 2 km S. S. W. of Ouldja (Khenchela).

Hopper bands reported 15 km N. N. E. of Ouldja (Khenchela).

Hatching reported from 11 to 15 May in the Oued el Arab, near Khanga Sidi Nadji (Khenchela).

Hopper bands reported to the S. of Khanga Sidi Nadji (Khenchela).

Swarms settled at the Douars Zaatit, Oued Oughat and Mongornou (Berrouaghia) and laid.

Hopper bands reported at Cida, Smara and Matina (Ouled Djellal. Laying reported at the Douars Mezrenna and Ziana (Tablat).

12 May 1933. — Swarms coming from the S. W. settled at the Douars

Ouled Trif and Sidi Brahim (Bibans) and laid over 70 and 20 hectares.

Hatching reported at the Douar M'cif (M'sila).

A small swarm settled at 3 p. m. on the hills of Chélife at Duperré, and laid.

Large hopper bands reported in the region of M'chounèche (Aurès).

General hatching reported at M'doukal, Souk des Ouled Madja, Magra and Aïn Tasalet (Barika).

Hopper bands reported at M'doukal and Souk des Ouled Nadja (Barika).

Hatching reported in the region of Boudourkane (Khenchela).

Hopper bands reported in the regions of Seïar, Djellal and Boudourkane (Khenchela).

Hopper bands reported near Négrine (Tébessa).

Hatching reported at the Oued Mekhabet, Oued Messad and on the Tajmout road (Laghouat).

Small swarms reported in the mixed commune of Remchi.

Hopper bands reported 5 km from Ouled Djellal.

A small swarm settled at the Douar Beni Mileuk (Cherchel) over 2 hectares.

Egg-laying over an estimated area of 15,000 hectares in the mixed commune of Saïda.

13 May 1933. — A swarm coming from the S. E. settled at Aïn-Serafil and Dolfusville (the Djendel). Pairing and oviposition on 14 May.

A swarm coming from the S. settled at the Douar Djebel Lough (Djendel) and laid over 85 hectares.

A swarm coming from the S. W. settled at the Douar Bouzina (Aurès).

Swarm settled at the Douars Beni Ghomeriane and El Aneb (30 km W. of Miliana).

A large swarm coming from the S. settled at Taфраous (Saïda). Departed 14 May, flying towards the N. E.

A moderately large swarm settled 12 km from Franchetti (Mascara).

Swarms reported at Sainte-Monique and St. Cyprien (Attafs).

A swarm coming from the S. settled at 9 a. m. at Grand Guergour (4 km S. of Aumale) and laid.

Hatching reported at the Douars Magra, Aïn-Hadjer and Barika (Barika).

Egg-laying reported at the Douar Tahanent (Aïn-Touta).

Hatching reported at Bordj Guenifita, Col des Sables and El-Adjeb (Laghouat).

A small swarm settled in the Oued Messelmoun (Cherchel).

Hopper bands reported at Dakhla el Haouita (50 km W. S. W. of Laghouat), travelling towards the N. E.

- 14 May 1933. — A swarm coming from the S. E. settled at the Douar Kessabia (M'sila) and laid over 100 hectares.

Swarms coming from the S. settled at the Douars Maalha and El-Isseri (Palestro) and laid.

A swarm coming from the S. settled 2 km 500 m. N. of Aumale and laid.

Hatching reported at Makmesa (50 km S. W. of Aflou).

Hatching reported at the Douars M'doukal, Barika, Magra (Barika).

Hopper bands reported at the Douar M'doukal (Barika), travelling towards the N.

Hatching reported at Tmessort, Douar Kimmel (Aurès) of eggs laid from 20 to 23 April.

Hatching and hopper bands reported in the regions of Ouldja and Boudourkane (Kenchela).

Hatching reported at Bekhedache, Boutrekfine, Sidi Makloul and also at the shooting ground (Laghouat).

Hopper bands reported 4 kms N. W. of Ghardaïa, travelling S. E.

Hopper bands reported at Kef el Guernan and Dra Remel (Ouled Djellal).

Hatching reported at Kef Trab, Chaleb Merzoug and Mendi (Ouled Djellal).

- 15 May 1933. — A somewhat large swarm settled at the Douars Zougara and Tacheta (le Braz).

Three swarms settled at 6 p. m. 6 km W. of Duperré. Pairing and some laying on 16 May.

A swarm settled at the Douar Tighzert (Téniet-el-Haad) and laid over 50 hectares.

A small swarm settled at the Douar Medjadja (Chélif) and afterwards flew towards the N.

Three large swarms passed Warnier (Chélif) flying towards the N.

A small swarm coming from the W. (Douar Medjadja and Chélif) passed the Douar Maine (Ténès) flying towards the S.

A swarm coming from the S. settled at El-Marsa (Ténès) over 10 hectares. Departed on 16 May.

A swarm settled at the Douar Beizid (Seraou) and laid over 3 hectares.

A swarm coming from the S. W. passed the Douar Heumis and Fromentin (Ténès), flying towards the N.

A swarm coming from the N. E. settled at midday 2 km E. of the Douar Taria, covering 200 hectares.

A small swarm coming from the S. settled at 6 p. m. at the Douar Chaouachi (Cassaigne) over 22 hectares.

A small swarm coming from the S. W. passed Renault at 6 p. m., flying towards the N. E.

A small swarm coming from the S. E. passed Zemmoral flying towards the N. N. W.

A large swarm settled at the Douar Djoua (Oued-Marsa).

A swarm coming from the S. E. settled at the Douar Beni Ilmane (M'sila) and laid.

A swarm coming from the S. W. passed Bou-Moussa (Tébessa) flying towards the N. E.

General hatching reported from 15 to 21 May at Aïn-Hadjjar, Souk des Ouled Nadja, Magra and Nebch Eddib (Barika).

First hatching reported at the Douar Gosbate (Barika).

Hopper bands reported from 15 to 21 May at the Douar Berhoum (Barika).

Hopper bands reported from 15 to 25 May in the region of Soukies Betita (Tébessa), travelling towards the N. N. E.

Egg-laying reported at Djebel Groum, Oued Soltan, Djebel Bouza, Djebel Lakhal, Draa Boumia (Aïn-Touta).

Hatching reported 15 and 16 May in the region of Sidi-Masmoudi (Aurès).

Hopper bands reported 15, 16 and 17 May at the Douars Oulach and Tadjmalet (Aurès).

Hopper bands reported in the region of Seïar (Khenchela).

Hatching reported at El-Hmaïa, Metlili, the Pigeons' Rock, Djebel Dakhla (Laghouat).

Very sparse swarms reported at the Douars Kréan and Oulad Riach (Remchi).

Egg-laying spread over 650 hectares.

Many large swarms, reported throughout the first half of May in the annexed region of Djelfa, have laid densely over 6,500 hectares.

Small swarms settled near Sakamody (Arba) and laid.

Hatching reported from 15 to 27 May at the Douar Beni-Ouassine (Marnia).

Hatching reported from 15 to 25 May in the regions of Messaad, Zouar, Aïn-el-Ibel, Timerkmert, Oued-Seddeur and Zénina (Djelfa).

16 May 1933. — A swarm settled at Chanzy. Pairing and oviposition. A swarm coming from the S. passed Champlain (Berrouaghia) flying towards the N.

Egg-laying reported at Chaïbia (Cassaigne) over 20 hectares.

A small swarm settled at Ténira. Pairing and oviposition.

Large swarms settled at the Douar Messoulane and at Titen Yahia (Télagh) and laid.

A large swarm settled at the Douar Ycelna (Frenda), afterwards flying towards the N. E.

A small swarm coming from the W. flew over the Douar Beni Missel (Nedromah) and turned again towards the W.

A swarm settled at the Douars Makda and Guerdjoun (Mascara) over 20 hectares.

A small swarm settled at Mezzaïas (Bougie).

Hatching reported at Bourgueroui near Djellal (Khenchela).

Hopper bands reported from 16 to 20 May at Khanga Sidi Nadji and also in the region of Djellal (Khenchela).

Hopper bands reported in the region of M'chounèche (Aurès), being the hatching of 27 April.

Hopper bands reported at Oued-el Bir near Bir el Attee (Tébessa), being the hatching of 10 May, travelling towards the N. W.

Hatching reported at the Bordj of Sidi-Makloul (Laghounat) over 1 square km.

Hopper bands reported at El-Atteuf (10 km E. S. E. of Ghardaïa).

A small swarm settled at Djebel Karouba (La Mina).

A swarm extending over 4 square km passed Bouguirat (Mostaganem), flying towards the N. W.

17 May 1933. — Swarms settled at the Douars Ouled Ferguen and Ousera (Berrouaghia). Oviposition over the Douar Ousera.

Hatching reported at the Douars Saïda, Selmane and Ouitlène (M'sila).

Swarms coming from the N. settled at the Douars Souflat (over 50 hectares) and Mihoud (laying over 20 hectares) in the commune of Aïn-Bessem.

A swarm coming from the N. N. E. settled at midday at the Douars Beizig and Rouabah (Sersou).

Swarms settled at the Douars Bethaïa, Beni Chaeb, Ouled Ghalia (Chécliff). Pairing.

Swarms settled at the Douars Boukram (over 15 hectares), Guerrouma (over 10 hectares), El-Isseris (over 1 hectare), in the commune of Palestro.

A swarm settled at Maoussa (Mascara) over 20 hectares.

A swarm coming from the S. E. settled at 6 p. m. 12 km E. of Berthelot and laid on 18 May over 30 hectares.

Very large bands of hoppers of the 3rd and 4th stages reported between the oases of M'Raïer at Meggarine (Touggourt).

A swarm settled at the mouth of the Oued Sidi Ahmed (Port Gueydon) and laid on 22 May.

General hatching reported at the Douar Gosbate (Barika).

Hopper bands reported from 17 to 19 May in the region of M'chounèche (Aurès).

Hatching reported at the Douars Tahamont and Djebel Groun (Aïn-Touta).

Hopper bands reported at the barrage of Ksar de Ghardaïa, travelling towards the S.

A swarm settled 500 km N. W. of Cape Ivi (Cassaigne).

Swarms settled at the Douars Tacheta of Zouggar (les Bras) and laid.

Laying reported at the Douars Sidi-Khelifa and Metenane (Aïn-Bessem).

18 May 1933. — Swarms settled on 18 and 19 May on the left bank of the Sebaou (the Marshal's Camp) and laid over a length of 6 km.

A small swarm settled near Ténès and laid.

A swarm settled near Téniet-el-Haad over 20 hectares.

A large swarm, coming from the S. E. settled at the Douar Mettenane (Aïn-Bessem).

A swarm coming from the S. W. settled at 1 p. m. at the Douar Rouabah (Sersou) over 10 hectares. Departed on 20 May, flying towards the N. E.

A small swarm settled at the Douar Sefioun (Télagh) and laid.

A large swarm settled at the Douar M'hamid (Télagh), covering 100 hectares.

Large swarms coming from the S. W. settled in the evening at Chaïbia and Ouillis (Cassaigne) and laid.

Hatching reported at the Douars Ait-R'zine and Bou-Hamza (Akbour).

A swarm settled at the Douar Mallaseffa (Palestro) over 2 hectares.

Hatching reported at the Douar Mekarta (Maadid).

Small swarms coming from the S. E. settled in the evening at the Douars Ouled Bougheddou and Aouisset (Tiaret).

A very large swarm coming from the E. settled at the Douar Adjaletes (Aflou), laid, and flew towards the N.

A swarm reported at Trumelet.

A large swarm settled near Bougie.

Hopper bands reported at the Djebel Saora and Bir Er Ogla, in the Region of Aïn-el-Hadjar (Barika), being the hatching of 11 May. They were travelling towards E. N. E.

Hatching reported at Sed Bouneigneur and Djelfet Naceur (Barika) of eggs laid from 25 to 27 April.

Hopper bands reported from 18 to 23 May in the regions of Ouldja and Seïar (Khenchela), travelling towards the N. E. and N. W.

Hatching reported at the Douar Tajmout (Aurès).

Hopper bands reported from 18 to 21 May at the Douars Oulach and Tadjmout (Aurès), travelling towards the N.

Egg-laying reported at Djebel Groun (Aïn-Touta).

Egg-laying reported at the Beni-Sliman (Tablat) over 1 hectare.

19 May 1933. — Hatching reported at the Douar Maadid (Maadid).

Hopper bands reported 70 km N. E. of El-Goléa.

Egg-laying reported in Oued-Fodda over a length of 5 km (Chélif).

A small swarm settled at 4 p. m. 30 km E. of Tigzirt.

A swarm coming from the S. E. settled 6 km from Berthelot over 30 hectares. Pairing.

A large swarm coming from the S. settled at Ténira.

A swarm coming from the S. W. settled near Ouillis (Cassaigne) and laid over 70 hectares.

First hatching reported at the Douars Bou-Thaleb and Hamma (Rhira) of eggs laid on 18 April.

A swarm settled at the Douar Ouled Nehar Cheraga (Sebdou) and laid over 4 hectares.

Hatching reported at Djorf Baroud, Douar Tlalsa (Marnia).

Hatching and hopper bands reported from 19 to 21 May at the Douar M'doukal (Barika).

Hopper bands reported 70 km N. of El-Goléa, travelling towards the E.

Hopper bands reported at Oued Khafoura (24 km N. of Ouled-Djellel), travelling towards the N. E.

Hatching reported at Lograbia (35 km N. W. of Ouled-Djellal).



Hatching reported at the Douars Oulad sidi Brahim, Oulad Slimane, Oulad Mohamed, M'barek and Roumana (Bou-Saada).

Various small swarms settled from 19 to 21 May at the Douars Beni Kouffi, Bou-Nouh and Frikat (Dra-el-Misan).

General hatching in the regions of Titen Yahia and Magenta (Télagh).

20 May 1933. — General hatching reported at the Douars M'cif, Saïda, Ouled Addi, Selmane, Bou-Hamadou (M'sila).

A swarm coming from the S. settled at the Douar Siouf (Boghari).

A swarm reported at Guyotville.

A large swarm coming from the E. N. E. settled at Rezzaz (Blad-Touaria) and laid over 50 hectares.

A swarm settled 5 km from Sebdou and afterwards flew towards the N. W.

A swarm settled on the hills of Chélif at Aïn-Tédelès and laid.

Hatching reported near the Moroccan frontier (Marnia).

A large swarm settled at the Douar Benismier, 4 km S. of Lamoricière (Sebdou), covering 1 square km, and laid.

First hatching reported at the Douar Beni-Oughlis (Soummam).

A small swarm settled at Nazereg (Saïda).

Swarms reported at the Douars M'sala and Tifra (Soummam).

General hatching from 20 to 25 May at the Douars Tagleit, Maadid and Mekerta (Maadid).

Hopper bands reported at Seïar (Khenchela) travelling N. N. W.

General hatching at the Douar Tahament (Aïn-Touta).

A large swarm settled at 3 p. m. to the N. of Letourneux and laid over 20 hectares.

Large hopper bands reported in the region of Biskra.

Hopper bands reported in the regions of Messaad, Zaccar, Aïn-el-Ibel, Timerkmert, Oued Seddeur and Zenina (Djelfa).

Large swarms settled at the Douars Tizara, Ziana, Tourtatsine and El Ouzana (Tablat), and laid.

Large hopper bands reported at the Douar Branis (Aïn-Touta).

21 May 1933. — Hatching reported at the Douar El-Ksour (Aïn-Touta).

Hatching reported at the Douars Amalou, Chellata, Tamakra, Tazmalt and Tigrine (Akbou).

Various swarms coming from the S. settled at Letourneux over 60 hectares.

Hatching reported at the Douar Goshate (Barika).

Hopper bands reported in the regions of Bedeau and Titen Yahia (Télagh).

22 May 1933. — Hatching reported at the Douar Taguedide (Aumale).

Hatching reported at the Douars El-Main and Ouled Trif (Bibans).

A swarm settled at Aïn-Féhan.

A large swarm coming from the S. settled at Dombasle.

Hatching reported on the outskirts of Barika and Maadid.

Hatching reported at the Douars of Hadjeres and Selamates (Sidi-Aïssa).

Egg-laying reported at the Douars M'zalla and Abrarès (Soummam), in Oued Dass over 6 km.

Moderately large swarms settled at Rivet (near Algiers) and laid.

A small swarm settled 5 km S. S. E. of Descartes.

Hatching and hopper bands reported from 22 to 31 May in the region of Berhoun (Barika).

Hopper bands reported at Aïn-el Hadjar (Barika).

First hatching reported at the Douar Beni-Oughlis (Soummam).

Hatching reported on 22 and 23 May at the Douar M'doukal (Barika).

Small swarms passed the Douars Beni-Aïssi and Iraten (Fort-National) flying towards the N. W.

A swarm reported at the Douar Zenata and Oulas Alaa (Remchi).

- 23 May 1933. — A small swarm settled near Méchéria. Departed on 25 May, flying towards the S.

Hatching reported near Thiers (Palestro).

A large swarm settled at Bellecôte and laid over 250 hectares.

A swarm settled near Pélissier and laid.

Egg-laying reported at the Douars of Oulad Yagoub Cheraga (Aflou).

Hatching reported at the Douars Souflat, Mihoub, Aïn-Hasem, Metenane (Aïn-Bessem).

Hatching reported at Khelidj and Fedj Rih, Douar Barika (Barika) of eggs laid 27 April.

Hatching reported at Smaïl. Douar Bouzina (Aurès).

Hatching reported at the Douar Tablat (Tablat).

- 24 May 1933. — Hatching reported at the Douars Taïcha (Aumale).

Egg-laying reported in Oued Flidoun (Soummam) over 2 hectares.

A large swarm settled in the Aichour Valley (Arba) and laid over 40 hectares.

Isolated adults reported near Sidi-Moussa.

Swarms coming from the S settled at the Douars Tamellahat and Larjem (Chéiff) and laid over 30 hectares.

A pink swarm, coming from the S., settled at 10 a. m. at Seïar (Khenchela).

It departed at 4 p. m. flying towards the N. N. E.

Hopper bands reported in the region of Seïar (Khenchela) travelling towards the N. N. W.

Hatching reported at Hassi Mestour, El-Medjena and Oued Seggueur (140 km N. N. W. of El-Goléa).

- 25 May 1933. — A swarm coming from the N. settled at Selmaya and M'siline (Boghari) and laid over 11 hectares.

Hatching reported at the Douar Ras-el-Aïoun (Corneille).

Three swarms settled at the Douar Lardjem (Chéiff) and laid.

A swarm coming from the N. E. settled at the Douar Oussera (Chellala) and laid over 8 hectares.

Hatching reported at the Douars Oussera, Serguine and Megane (Chellala) of eggs laid from 2 to 4 May.

Swarms settled at the Douars Ouled Ghalia and Zaccar (Chéiff) and laid.

A swarm coming from the S. W. settled near Lapasset (Cassaigne) covering 60 hectares, and laid.

Pink swarms coming from the S. settled at 3 p. m. at Négrine and Souklma (Tébessa). They departed at 10 a. m., flying towards the N.

Hatching reported up to 31 May in the N. of Aïn-Touta.

Hopper bands reported in the region of Khanga Sidi Nadji (Khenchela).

Hopper bands reported in the region of Sidi-Masmoudi (Aurès) travelling towards the N.

Pink swarms reported from 25 to 30 May in the regions of Amguid, N'goussa, Ouargla (Ouargla) flying towards the S.

26 May 1933. — Hatching reported at the Douars M'zita, Sidi-Brahim and El-Mehir (Bibans).

Serious laying reported near Turenne.

Swarms coming from the S. settled at the Douars Mhamid, Mesmoth, Tirmifine, Oued Eltat, Aouzalel (Palikao), and laid.

Egg-laying reported at Rovigo (near Algiers).

Hatching reported at the Douars Ain-Hazem and Mihoub (Aïn-Bessem).

A small swarm settled on the right bank of the Chélif, at Pont-du-Chélif, and laid.

Hatching reported at the Douars Tourtatsine and Mezrenna Aïn-Bessem (Tablat).

A pink swarm coming from the S. settled at 10 a. m. at El-Amra (Khenchela). It departed at 2 p. m., flying towards the N.

Hopper bands reported at Djebel Berga and Tabaalel, region of Ouldja (Khenchela), travelling towards the N. E.

Hopper bands reported in the region of Djellel (Khenchela).

General hatching at the Douar Bouzina (Aurès).

27 May 1933. — A swarm coming from the S. W. settled at 11 a. m. at the Maison-Carrée Botanic Station and laid on 29 May.

Large swarms passed Bordj-Ménaïel and settled on the banks of the Oued Isser.

Hatching reported at the Douar El Isseri (Palestro).

Large swarms settled at Ben-N'choud (Dellys) and laid in the Sebaou.

A swarm settled at Mleta (Tigzirt).

Various pink swarms coming from the S. settled between Seïar and El Amra (Khenchela), afterwards returning towards the S.

Hopper bands reported in the region of El Amra (Khenchela), travelling towards the N.

A swarm settled on the hills of Oued Sebaou (Abbo) and laid.

General hatching in the mixed commune of Marnia.

Hatching reported at the Douars of El-Ouzana and Tourtatsine (Tablat).

28 May 1933. — Hopper bands reported near Berrian (40 km N. of Ghardaïa).

A pink swarm reported at Fort Lallemand (160 km S. E. of Ouargla), flying towards the S.

Slight hatching at Assameur and Sohane (Arba).

Hatching reported from 28 to 31 May on the hills of Chélif (Duperré).

- 29 May 1933. — Hatching reported at the Douars Bou-Saada, Oulad Khaled, Oulad Ameur Dehara, Oulad Ahmed, Oulad Sidi-Ziane (Bou-Saada).  
 A swarm settled at Issers and laid.  
 A small swarm coming from the S. settled near Frenda and laid.  
 Hatching reported at the Douar Mamora (Aumale).  
 A swarm settled near Rébeval and laid.  
 A swarm settled near Cape Matifou (near Algiers) and laid.  
 Hatching reported at the Douar Metenane (Ain Bessem).  
 Hatching reported at the Douars Sidi-Aïssa, Oular Ali ben Daoud, Zemlane and Tafraout (Sidi Aïssa).  
 Hopper bands reported at Bedeau and Titen Yahia (Télagh), these being the hatching of 7 May.  
 General hatching in the mixed commune of Maadid.  
 A pink swarm coming from the N. E. settled in the evening at Guerrara (Ghardaïa), leaving on 30 May and flying towards the S. W.  
 Hatching reported in the Valley of the Tafna (Remchi).  
 A small swarm reported at the Douar Akfadou (Upper-Sebaou).
- 30 May 1933. — Hatching reported at the Douar Oued Berdi (Aïn-Bessem).  
 A pink swarm coming from the S. settled at 10 a. m. near Seïar (Khenchela).  
 It left on 1 June, flying towards the N.  
 A pink swarm coming from the S. settled at Ras Aïcha (Khenchela).  
 A pink swarm coming from the S. S. E. settled at 5 p. m. at Boudoukhane (Khenchela). On 1 June it flew towards the N.  
 Hatching reported in the hills of Chélif (Kherba).
- 31 May 1933. — Very large hopper bands converged from all directions towards the oasis of Laghouat.  
 A large pink swarm, coming from the S. settled at 2 p. m. at Metlili (28 km S. of Ghardaïa), leaving at 10 a. m. on 1 June and flying towards the N.  
 A large pink swarm, coming from the N. settled in the evening at Daïa ben Daoua (Ghardaïa). It departed on the morning of 1 June, flying towards the S.  
 Hatching reported at the Douar Ouled Anteur (Boghari).  
 Hatching reported at the Douar Aouzalel (Palikao).  
 Hatching reported at the Douar Oued Oughat (Berrouaghia).  
 Hatching reported at Oum Latlet and Lelhoud (Boghari).  
 Egg-laying reported at Noisy-les-Bains, Georges Clémenceau, Eugène Etienne, Hennaya, Mazagran (department of Oran).  
 Egg-laying reported at Seddouk and Zazmalt (department of Constantine).  
 Considerable hatching reported at the Douar Magra (Barika).  
 Various pink swarms coming from the S. settled at Taghit, Zaouia, El Amra, Seïar, Tissliit, Guern and Abiod (Khenchela).  
 A pink swarm coming from the S. settled at 4 p. m. at Tebourg Ahmed (Khenchela), departing on June 2 at 8 a. m. in a westerly direction.

## India: Plant Diseases in the Bombay Presidency (1).

Panama Disease of bananas has broken out in a severe form in a plantation near Poona. The disease has spread to a few other localities, where suckers from diseased plants were planted. It is noteworthy, however, that only one variety of bananas (locally known as *Son*) is susceptible to this disease, while all the other varieties are reported to be resistant. Steps are being taken to localise infection, so that the disease may not spread over a wide area.

The cause of the gummosis of citrus in the Bombay Presidency has been determined by Mr. S. F. Ashby, Imperial Mycological Institute, London, as *Phytophthora palmivora* Butl.

*Leeina philippinensis* Petr. was isolated from stems of sugarcane grown by the Belapur Company, Ltd., near Poona. The fungus was identified by Mr. S. F. Ashby.

## Southern Rhodesia: Locust Invasion, 1933 (2).

Monthly Report No. 6, May, 1933.

### 1. *Nomadacris septemfasciata*.

Winged swarms of this species continue to move about in various directions practically the whole of the colony being included in these movements.

The flights are not of a definitely migratory character but a general westerly drift is apparent, notwithstanding the fact that some easterly movements are also recorded.

There may be some tendency for the swarms to leave the dry low veld for the higher ground. Large swarms have appeared in the humid zone close to the eastern border where no hoppers occurred. There appears to be a tendency for swarms to continue haunting certain localities in this zone flying around without any definite direction. The higher parts of the Melssetter district, including the Chipinga sub-district are thus affected.

The flight of the swarms is generally low and characterised by much settling, the swarms tending to 'roll' along over the ground and not to fly high above it.

Development of red pigment on the head and pronotum of the insects has been noted during the month, and at the end of the month there were indications of the pink suffusion at the base of the hindwings, although this had attained only a very small fraction of its full development.

### 2. *Locusta migratoria migratorioides*.

There has been no record of this species in the colony during the month.

Eggs have been laid by caged specimens from the first week of the month, but no hatching has as yet taken place.

(1) Communication from the official correspondent of Institute, Mr. B. N. UPPAL, B. A., Ph. D., Plant Pathologist to the Government, Bombay Presidency, Poona.

(2) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

### 3. Feeding.

Whereas the hoppers of both species confined their attention more or less to *Gramineous* crops, the winged swarms have attacked a wide variety of plants including tobacco but the type of feeding suggests that latterly the object has been moisture more than food. This phase has followed a period of voracious feeding immediately after the attainment of maturity.

### 4. Parasites and Disease.

No disease has been discerned amongst the swarms, and parasites noted have been limited to one Dipterous larva (unidentified) and a number of instances of infestation with thread worm.

### 5. Enemies.

Apart from natives, who are collecting the locusts for consumption whenever possible, enemies have not been much in evidence.

### 6. Destruction of Hoppers.

The campaign came to an end early in the month.

### 7. Damage to Crops.

Injury to European grown crops reported has been limited to a comparatively few small patches of winter grain during the earlier part of the month. The grain in most cases was young and is growing again.

Late Kaffir millet is reported to have been destroyed by winged swarms in some areas.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**French West Africa (Niger Colony).** — A Decree of 25 February 1933 contains regulations regarding the methods of locust control in the Niger Colony and provides for awards for their destruction. (*Bulletin Mensuel de l'Agence Economique de l'Afrique Occidentale Française*, Paris, juin 1933, 14<sup>e</sup> année, n<sup>o</sup> 150, p. 185).

**Germany (Prussia).** — The Decree of 10 March 1933 for the protection of animals and plants forbids *inter alia* the killing, capture or chase of bats (*Chiroptera*) and, in general, of all species of birds. The following are however excluded from such protection:— crows and rooks (*Corvus frugilegus* L., *C. cornix* L., *C. corone* L.), sparrows (*Passer montanus* L., *P. domesticus* L.) and certain birds of prey. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 11-26).

**Germany (Rhine Province).** — By Decree of 18 November 1932, with a view to the control of *Nectria coccinea* var. *sanguinella* and *Dothichiza populea* on the Canadian poplar [*Populus monilifera*], similar measures to those adopted for the District of Münster [see this *Bulletin*, 1933, No. 1, p. 10] have been prescribed in the District of Düsseldorf. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 28).

**Cirenaica.** — The presence of the *Bryotropha plebejella* having been again ascertained on tomato plants, it is forbidden by Governmental Decree dated 16 June 1933 to export tomatoes from the Colony until further order. (*Bollettino Ufficiale del Governo della Cirenaica*, Bengasi, giugno 1933, anno XXII, n. 6, p. 388).

**Italy.** — By Ministerial Decree of 23 June 1933 the communes of Monteroduni and Isernia in the province of Campobasso have been declared infected with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 8 luglio 1933, anno 74<sup>o</sup>, n. 157, p. 3031).

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[This handbook opens with five analytical tables based on the characteristic alterations caused in plants by attacks of pests. The tables deal respectively with:— (1) horticultural plants in general; (2) fruit yielding plants; (3) vegetables; (4) ornamental plants; and (5) fruit, vegetable and ornamental plants arranged in alphabetical order of their common names in German.

These are followed by a description of the pests arranged in systematic order with notes on their life history, damage and methods of control, and an alphabetical list of insecticides.

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## NOTES

VIIIth International Ornithological Congress. — This Congress is to be held at Oxford in July 1934, under the presidency of Dr. E. Stresemann, of Berlin.

Prof. ALESSANDRO BRIZI, *Segretario generale dell'Istituto, Direttore responsabile.*

# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### Algeria: *Amphiestris baetica* (1).

Numerous adult specimens of *Amphiestris baetica*, Ramb. have been reported in the course of June 1933 among the crops in the communes of Dra-el-Mizan, Tizi-Reniff and Palestro.

### Algeria: The Moroccan Locust (*Doclostaurus maroccanus*) (2).

Adult specimens have been reported in the course of June 1933 in the douars Aïourn-el-Beranis, Hussasnas Cheraga and Hounet (Saïda), as well as in the douar Gosbate (Barika).

### Angola: Movements of the Red Locust (*Nomadacris septemfasciata*) and Tropical Migratory Locust (*Locusta migratoria migratorioides*) (3).

In 1932 locusts have been reported for the first time on 12 March in the frontier district of Cuando, district of Bié near the frontier of Northern Rhodesia. Large swarms of *Nomadacris septemfasciata* and of *Locusta migratoria migratorioides* began to pass over this region about the middle of February, mainly by the station of Séde between the rivers Lomba and Cuando; nothing is known of their origin and after their appearance flight seemed to take all directions.

On 4 April the first swarms made their appearance at Lutango (Sá da Bandeira) and at Jau, district of Huila. On 8 April a swarm of 2 km in length settled at Mulola do Ontite, between Humpata and Chibia, district of Huila, then taking flight towards the North. The damage done was very considerable and the plague was combatted by means of flame-throwers, using petrol as the fuel. A swarm covering 10 square kilometres made its appearance on 26 April at Tampa and Brusco, district of Mossamedes and flew towards Serra da Chela.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

(2) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

(3) Communication from the Director of the Laboratory of Plant Pathology, Luanda, Angola, transmitted to the International Institute of Agriculture by the Direction General of Agricultural Services, Ministry of Agriculture, Lisbon, Portugal.

On 20 and 30 of April the circumscription of Quilengues, district of Benguela experienced two large invasions which destroyed nearly all the crops. Nothing is known as to the origin of these two swarms or the direction taken by them.

At the beginning of May an invasion took place at Lola and at Camecuio, district of Mossamedes and has occasioned very considerable damage. Flame-throwers were employed.

No communication was received during the month of June by the Department of Agricultural Services in relation to the movements of locusts in the Colony.

On 3 July a swarm passed over Duque de Bragança, district of Malange, flying East and West. On 17 July another swarm passed following the same direction. On 24 July there was observed on the Agricultural Station of Bié (18 km north of Silva Porto, district of Bié) a dense swarm flying from the East to the West. As a control measure tar was employed with satisfactory results. During the month on several occasions various swarms settled at Quibala, district of Quanza-Sul. Nothing is known as to the origin of the swarms or the direction taken by them. Serious damage has been done to crops.

In Portugalia, headquarters of the frontier district of Chibato, near the Belgian Congo on 7 September at 11 a. m. a swarm of *Nomadacris* passed over, flying in the direction N. E. to S. W.

On 9 October a swarm of very great density was noted above the civil station of Camenongue (Vila Luzo) flying towards the N. E. On 10 October during two hours there passed over Vila de Serpa Pinto, circumscription of Menongue, a very large swarm flying N. E. to S. W. On 12 October, for six consecutive hours, another large swarm passed over the same locality flying towards the N.

On 2 November there passed over the civil station of Jau and Vila de Chibia, district of Huila two very large swarms coming from the S. and flying N. It is conjectured that these locusts were the outcome of the last oviposition effected in the mountain chain of Chela. At Quibala, district of Quanza-Sul, the passage of destructive large swarms was continuously reported; the result was great discouragement among the cultivators who saw their crops constantly threatened. On 17 November two swarms passed over the civil post of Jau, district of Huila, coming from the S.; one of these took a south-easterly direction devouring en route large quantities of maize; the other went towards the N. On 28 November another swarm again passed by Jau; it caused considerable damage. On 4 November another swarm of *Nomadacris* flying from East to West passed over Vila Arriaga. This swarm which came from the Huila district took three hours to pass, it again moved towards the district referred to. In the district of Mossamedes hopper bands made their appearance. The region of Chela, district of Mossamedes, was invaded on 26 November by a swarm which destroyed all the native grown crops recently sown. On 22 November the region of Malange was devastated and the locusts settled in the valley of Cassange destroying the crops and were believed to have laid there.

During December no information was received as to the movements of locusts.

### **Australia: Success in Control of Bunchy Top Disease of Bananas in New South Wales (1).**

Production of bananas in New South Wales in 1913 amounted to 31,047 bushels, and slight annual increases in production were recorded up to 1917. Rapid expansion of the industry occurred during the years 1918-1922 and peak production of 650,300 bushels was reached in 1922. At this time 4,570 acres were in bearing and 898 acres were not yet bearing. As a result of rapid spread of the Bunchy Top disease, the industry then declined rapidly, and in 1925 only 91,144 bushels were produced; 1,002 acres were then in bearing and 502 acres carried young plants.

Bunchy Top was known to have existed in New South Wales prior to 1913, but its nature was unknown until the investigation of 1924-25 demonstrated that it was caused by a virus.

A series of regulatory measures was drawn up by the New South Wales Department of Agriculture in 1927 by virtue of the powers contained in the N. S. W. Plant Disease Act (1924). Quarantine areas were declared, eradication of diseased plants was enforced and movement of suckers was allowed only under permit after certification for freedom from diseases and pests.

The industry is now rehabilitated, production figures gradually improved during the years 1927-1930 and rapid development has occurred since that time. The latest official figures available are those for the 12 months ending June, 1932, when 515,140 bushels were produced, 4,733 acres were then in bearing and 2,394 acres carried young plants.

### **Eritrea: Locusts (2).**

There were reported at the beginning of July 1933, between the Gasc and the Setit, and especially near Ducambia, swarms of locusts of a species not yet identified, coming from Abyssinia, and flying towards Barentu.

There is no special report from the Anglo-Egyptian Sudan.

### **United States of America: Disappearance of *Zostera marina* along the Atlantic Coast of North America (3).**

The widespread destruction of *Zostera marina*, the common 'eel grass', along much of the Atlantic Coast of North America constitutes one of the outstanding biological phenomena of the past year. As recorded by field observers this plant which, until recent years, was abundant in shallow salt water from

(1) Communication from the official correspondent of the Institute, Mr. R. J. NOBLE, Ph. D., M. Sc., B. Sc. Agr., Biologist, Department of Agriculture, Sydney, New South Wales, Australia.

(2) Communication from the Government of Eritrea, transmitted to the International Institute of Agriculture, by the Italian Ministry of the Colonies (Bureau of Enquiry and Propaganda).

(3) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

North Carolina to Nova Scotia and Prince Edward's Island has almost completely disappeared throughout a large part of its range.

Systematic field observations have been made chiefly by investigators of the Biological Survey of the United States and the Biological Board of Canada because *Z. marina* constitutes under normal conditions more than 80 per cent of the winter food of sea brant, an important game bird. *Zostera* is to a less extent also the winter food of other important game birds. Some additional notes are being made by other biologists interested in marine problems.

All observers agree that great areas extending all the way from Beaufort, North Carolina, to Nova Scotia, in which *Zostera* was abundant during earlier years, were almost denuded the summer of 1932. In many of these areas, but by no means all, there was a marked diminution in 1931, and there was some evidence of local decline as early as 1930. Throughout this affected area, from Beaufort, North Carolina, to the Gulf of St. Lawrence, there are localities such as estuaries and the mouths of some of the rivers, in which the sea water is markedly diluted by fresh water, where there still exist dense stands of apparently normal and healthy eel grass. Upper Chesapeake Bay, south of Baltimore and Annapolis, is an example. All reports indicate a normal healthy condition of eel grass on the Pacific Coast.

A survey by Mr. Clarence Cottam in the early spring of 1933 disclosed areas where *Z. marina* had died out almost completely but which now showed a good stand of seedlings, with practically no mature plants. Great Bay and Grassy Bay, New Jersey, are examples of this. Some of the places he found showed new growths of 5 to 25 seedlings to the square yard. Along the coastal area of Pamlico Sound, particularly near the mouths of the rivers, the eel grass showed a decided improvement over conditions there in December, 1932.

A still more recent survey (June, 1933) of some of these areas, however, by Mr. Cottam indicates that the adverse factors are still operative as certain of the areas in which the stand appeared to be improving in early spring are again almost denuded of plants.

Great interest is added to this whole problem by the fact that an apparently similar condition has been observed in Europe along the Atlantic Coast of France and the Netherlands (1932). The French authors report the presence of numerous rod shaped bacteria in the leaves and rhizomes of affected plants. Various organisms have also been isolated by American investigators, but as yet no one organism appears to dominate and no evidence has been obtained of any parasitism.

#### **Morocco (French Zone): The Desert Locust (*Schistocerca gregaria*) (1).**

1 May 1933. — A swarm coming from the W. settled at Kashbah Bougriben 15 km S.W. of Berkane.

A swarm settled at Aïn-Oulad Messaoud (region of Oudjda) and laid. It departed on 3 May, separating into three swarms which flew towards Debdou, El-Aïoun and Berguent.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

- Hatching reported at M'Daouer Zireg and Dat Haddouch (region of Taza) of eggs laid on 8 and 9 April.
- A swarm coming from the S. settled at Aïn-Taghellahel (region of Oudjda) and laid over 30 hectares. It departed on 3 May towards the N. and settled at Mehenniz.
- 2 May 1933. — A swarm settled near Sidi-Moussa (region of Oudjda) and laid.
- A swarm settled at Djebel Darf (region of Oudjda).
- A yellow swarm, coming from the N. (Spanish Morocco), settled near Sakka (region of Taza).
- 3 May 1933. — A swarm settled near Kasbah Bougricha, between Berkane and Melilla.
- 4 May 1933. — A swarm settled 4 km N. of Kasbah Bougricha and laid.
- A swarm settled on the banks of the Moulouya, near Mechral and Mellah.
- Hatching reported at Defira, on the banks of the Oued Gueddal, at Batma el Djamaa and at Guerbour el Youd (S. E. of El-Aïoun).
- Hatching reported in the plain of Angad (Contrôle of Berkane).
- A yellow swarm of  $5 \times 4$  km coming from the E. settled at Betteina, near Guercif.
- Abundant hatching from 4 to 11 May throughout the, bureau, of Sakka, notably at Nekhila, Oussa and Oulad Hannaoui.
- 6 May 1933. — Laying reported over 150 hectares W. of Djebel Darf.
- Hatching reported at Sidi Ali Moussa, Oued El Assas and at Tanebdourt (Annexe of El-Aïoun).
- Laying reported at Tamsaunt (Contrôle of Guercif) over 60 hectares.
- 7 May 1933. — A swarm coming from the S. E. settled at El-Oumal (W. of Taza) and afterwards flew towards the S.
- A swarm coming from the S. S. W. settled at El-Oumal (W. of Taza).
- 8 May 1933. — A swarm settled S. of El-Aïoun, covering 900 hectares.
- 9 May 1933. — A yellow swarm settled at 5 p. m. at El-Ordjaune (N. W. of Outat el Hadj).
- Dense laying (23 herds) reported from 9 to 11 May in the region of Taza.
- A yellow swarm coming from the E. settled at Sahab Touil (N. W. of Taza) and afterwards flew towards the S.
- 10 May 1933. — Hatching reported at Thaat Hamar and Tafrout (Annexe of El-Aïoun).
- General hatching in the region of Oudjda over 930 hectares.
- Swarms from the N. and N. W. settled on 10 and 11 May at the W. of Taza.
- 11 May 1933. — Hatching reported from 11 to 18 May at Hassi, Aïn-Kikeb and Bou-Kabane (region of Mesguitem).
- Hopper bands reported from 11 to 18 May in the region of Sakka.
- 12 May 1933. — A yellow swarm  $8 \times 2$  km, coming from the S. E., settled at Bab Guerraoua (region of Fez) and afterwards flew towards the N. E.
- A yellow swarm  $3 \times 2$  km passed Caïd Khiat (region of Fez) going towards the N. W.

Egg-laying reported near the track from Debdou to Berguent over 1 hectare.

Hatching reported S. E. of Djebel Harraza (over 20 hectares) to Oued Isly (over 10 hectares), to Djebel M'gheris (over 100 hectares), and to the Azencot farm (over 300 hectares), in the region of Oudjda.

A swarm, coming from the region of Taze, passed Aïn-Mediouna and settled on 13 May at Beni-Oulid (region of Fez).

Various swarms, not very dense, coming from the S. W. settled on 12 and 13 May at El-Hadjeb (region of Meknès).

- 13 May 1933. — Hatching reported at Tamsaunt over 60 hectares, and Fedhge M'Soum over 200 hectares (region of Guercif).

Swarms coming from Ghiatta settled near Sahab Touil, Ouled Abdel-Krim, Ouled el Aroussi and Ouled Soltane (region of Fez).

- 14 May 1933. — A swarm coming from the S. settled S. of Meknès and laid over 1 hectare.

- 15 May 1933. — A swarm coming from the E. settled near the road from Fez to Meknès.

A yellow swarm of  $3 \times 2$  km, coming from the S. W. settled at Djebel Saïd (S. of El-Aïoun).

Egg-laying reported over 1 hectare near Gara Soltana (W. of Berguent).

Hatching reported at Mafen Bidi Tahar over 25 hectares, S. W. of Djebel Saïd over 80 hectares, and at Oued Metron over 30 hectares (region of Metroh).

A yellow swarm, coming from the N. (Spanish Zone) settled at the Douar El-Hadjat (50 km N. W. of Taza) and afterwards flew towards the W.

A swarm coming from Bab Guerraoua settled at the Ouled Aliane (region of Fez).

- 16 May 1933. — Egg-laying reported at Chabet Kaddoun (W. of Berguent) over 1 hectare.

Hatching reported W. of the coast 865 (region of Oudjda) over 150 hectares.

- 17 May 1933. — Swarms of slight density settled on the environs of Sefrou (region of Fez).

Hatching reported 7 points N. of Oudjda.

Hopper bands coming from the N. W. reported on the Taza road, between 12 and 30 km from Taza.

- 18 May 1933. — Hopper bands of  $3 \times 0.600$  km, coming from Zereg, reported at Mestigmeur (region of Oudjda) going towards the E.

A hopper band of  $5 \times 1$  km coming from Oued el Guedda and Oued el Assla reported at Sidi-Ali-Moussa.

Hatching reported at Nkehila (control of Guercif) over 100 hectares.

A swarm coming from the S. E. settled N. of Moulay Aïn-Djenane (region of Fez).

- 19 May 1933. — Considerable hatching reported in the Haddyines (region of Oudjda) over 550 hectares.

Large hopper bands reported towards Oued Messiine and between Mestigmeur and Sidi Yakoub (region of Oudjda).

- 20 May 1933. — Hatching reported 15 km S. W. of Berkane.



- 22 May 1933. — Hatching reported S. of Bou-Ladjer (region of Taza), of eggs laid on 9 May.  
New hatching reported at Guerrouaou and at Sidi-Brahim (region of Taza).  
Many yellow swarms observed circling between Tazzougert and Atchar on one side and Kerrando and Guarrouna on the other (Algerian-Morocco confines).  
Hatching reported W. of Sidi-Moussa (region of Oudjda).  
Hopper bands reported coming from Sidi-Mimoun and Cherga (region of Oudjd) towards the S. W.
- 24 May 1933. — Laying reported at Bled el Hammam (E. of Meknès) over 25 hectares.  
Hatching reported at Oued-Bou-Redim and W. and S. W. of El-Aïoun (region of Oudjda).  
Hopper bands reported towards Rich, Hammam, Batna, Djemaa and Djorf el Yandi (region of Oudjda).  
Hatching reported at Hamra, Djebel Haraza and at Djorf and Baroud (near Oudjda) over 90 hectares.  
Considerable hatching from 24 to 28 May in the environs of Taza.  
Large hopper bands coming from Sakka and travelling towards Guercif.
- 26 May 1933. — Laying reported at Aït Sebaa and Aït Seghrouchen (near Sefrou) over 50 hectares.  
Egg-laying reported in the environs of El-Hadjeb (region of Meknès) over 49 hectares.  
Egg-laying reported at Aït Sebaa and Aït Segrouchen (region of Fez) over 50 hectares.
- 28 May 1933. — Hatching reported at Djebel Saïd (Annexe of El-Aïoun), over 20 hectares, of eggs laid on 1 May.  
Hatching reported at Taghellaleb (El-Aïoun) over 50 hectares.
- 31 May 1933. — Many hopper bands came over the Moulouya, between Moulay el Bacha and Mechra Sfa, invaded Beni Mahou, and descended the Moulouya in a N. E. direction (region of Oudjda).
- 1 June 1933. — Large hopper bands, coming from the S., reported from the Moulouya to the Algerian frontier in the limit of Berkane, travelling N.
- 2 June 1933. — Large hopper bands reported at El-Ghassen (region of Oudjda).
- 3 June 1933. — Hatching reported at El-Hammam (region of Meknès) from eggs dating from 15-20 May.
- 6 June 1933. — Hatching reported at Sahab Touil and Ben Guerraoua (region of Fez).
- 7 June 1933. — Hatching reported at Chabet Kaddour and Gara Soltana (region of Berguent) from eggs dating from 15 May.
- 12 June 1933. — Hatching reported at Sidi-ali-ben-Brahim (N. of Fez), over an area of 3-4 hectares and near Sefrou (in Aït Seghrouchen) over an area of 600 hectares.

- 13 June 1933. — A pink swarm, coming from the N. W., settled partly at Tangerfi (region of Oudjda) and partly flew on S. E.
- 14 June 1933. — A pink swarm, coming from the W., settled at Mestigmeur (region of Oudjda) and left flying E.
- 15 June 1933. — Hopper bands continued to advance over El Ghassem (region of Oudjda).  
Hatching reported at Sebaa Aïoun and Hadj Kaddour (region of Meknès).
- 16 June 1933. — A pink swarm, coming from the N., settled at Timenzrai (circle of Missour-Taza).  
A pink swarm, coming from the N., settled at Bou-Rached (circle of Missour-Taza), left flying S.
- 17 June 1933. — Pink swarms, coming from the N. and N. E., reported on June 18-19 at Mehiriz, at Tahzalet and over El-Aïoun (region of Oudjda).
- 18 June 1933. — A pink swarm, coming from the N. W., settled at Tsiouant (region of Taza).  
Hatching reported at Gouiret el Fellas, at Rasfett and Rabali (region of Oudjda).
- 23 June 1933. — An inconsiderable pink swarm, coming from the N., settled at Outat el Hadj (region of Taza) following the course of the Oued Moulouya.
- 24 June 1933. — A pink swarm, coming from the N. E., settled at Aïn-Abbou (region of Taza).  
A pink swarm, coming from the N., settled at Bou-Rached (region of Taza) and left, flying S.  
A pink swarm, covering an area of  $15 \times 4$  kilometres, coming from the S. W., settled at Gourrama, flying N. W.
- 25 June 1933. — A pink swarm, covering an area of  $5 \times 5$  kilometres, coming from the N. W., settled at Reggou (region of Taza).
- 26 June 1933. — A pink swarm, covering an area of  $18 \times 4$  kilometres, coming from the E., settled near Gourrama.
- 27 June 1933. — A pink swarm, coming from the N. W., settled at Sahab el Rhar (region of Oudjda), flying S.  
A large pink swarm, coming from the N., settled at Guefat (region of Oudjda).  
A pink swarm, coming from the S., settled at Oglat Cedra (region of Oudjda), flying N.
- 28 June 1933. — A pink swarm, covering an area of  $4 \times 2$  kilometres, coming from the N., settled at Missour (region of Taza), flying S.  
A pink swarm, covering an area of  $5 \times 2$  kilometres, settled near Ksar es Souk.
- 29 June 1933. — A pink swarm, coming from the N., settled at Berguent (region of Oudjda).
- 30 June 1933. — A pink swarm, coming from the E., settled at Dar Caïd Madbioh (Haut M'Soum, region of Taza). Left on 1 July, flying W.

## Southern Rhodesia: Locust Invasion, 1933 (1).

Monthly Report No. 7, June, 1933.

### 1. *Locusta migratoria migratorioides*.

No reports or specimens of the European Migratory locust have been received during the month.

Eggs laid in confinement and kept under natural conditions have not yet hatched.

### 2. *Nomadacris septemfasciata*.

Swarms of the Redwing locust are still in evidence in various parts of the colony. Their movements are not of a definitely migratory character but there is evidence of a westerly drift due apparently to the prevailing winds.

On the 16th an exceptionally large swarm is reported to have passed over part of the Lomagundi district in a N. N. W. direction. Apparently this swarm was flying very high, during a portion of the day, but no exact particulars could be secured.

No reports of serious damage to winter crops have been received and from direct observations the locusts do not seem to be feeding voraciously at present.

Individual fliers of this species have been observed in various localities apparently left behind by swarms.

The development of red coloration continues generally, although an exceptional individual is occasionally to be met with still retaining much of the coloration of the newly matured individuals. The pink suffusion at the base of the hindwing is now unmistakably developing in many swarms although still far short of full development.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**French West Africa (Ivory Coast).** — A Decree of 7 April 1933 establishes the measures to be taken to protect from the coffee-berry borer [*Stephanoderes hampei*] the circles which are still immune from this insect. (*Bulletin Mensuel de l'Agence Economique de l'Afrique Occidentale Française*, Paris, juin, 1933, 14<sup>e</sup> année, n<sup>o</sup> 150, p. 185).

**Germany (2).** — By Decree of 11 June 1933 based on the Decrees of 3 November 1931 and of 20 April 1933 [see this *Bulletin*, 1932, No. 2, pp. 24-25, and 1933, No. 6, pp. 127-128] the measures intended to prevent the introduction of San José scale [*Aspidiotus perniciosus*] have been extended to consignments from Rumania.

(1) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F.E.S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

(2) Communication from the Biologische Reichsanstalt für Land-und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.

The Decree enacts in addition that living plants and the green parts of living plants, fresh fruits and their residues coming from Bulgaria, Greece, Yugoslavia, Poland and Czechoslovakia cannot be imported except through the Customs Offices, a list of which is appended to the present Decree, and on condition that an inspection made at the time of entrance, at the expense of the party interested, has not revealed the presence or the suspected presence of San José scale.

\* \* In all the States of the Reich provisions have been adopted prohibiting keeping the Colorado beetle [*Leptinotarsa decemlineata*] in the living state; these measures are similar to those published in Prussia [see this *Bulletin*, 1933, No. 1, p. 10]. (*Amiliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 5-6).

**Germany (Anhalt).** — By Decree of 18 April 1933, new regulations relating to the campaign against potato wart disease [*Synchytrium endobioticum*] have been adopted.

Crops and stocks of potatoes will be subject to inspection by the police and by the Plant Protection Service.

Every fresh appearance of the disease, ascertained or suspected, must be notified within 24 hours to the police who will forward the notification to the Central Bureau of the Plant Protection Service. This Bureau will report every new appearance to the 'Biologische Reichsanstalt' of Berlin-Dahlem.

On fields recognised as infected the remains of potato crops must be collected and carefully destroyed by fire or by burying.

It is forbidden to replant potatoes dug on such fields.

It is also forbidden to take them away from the farm where they were dug and they may only be used when boiled or baked.

The parings of these potatoes must be collected and burnt or given to the cattle after having been cooked. All transportation of potatoes coming from infected land should be avoided as far as possible.

On farms known to be infected by potato wart disease it is prohibited to grow any varieties of potatoes except those which have been declared absolutely immune by the German Service of Plant Protection. Infected farms are forbidden to sell or give away stable manure or liquid manure.

Tubers of resistant varieties, dug on infected ground, may be replanted on infected soil belonging to the same farm or in the proximity of their original soil.

Cellars and other localities where potatoes infected by wart disease have been stored must be well cleaned and disinfected with quick lime.

In communes where the potato wart disease has been ascertained to exist it is forbidden to cultivate other varieties of potatoes not recognised as immune to this disease.

This regulation will be applied to fields not exceeding  $\frac{1}{2}$  hectare the year following the ascertaining of the potato wart disease; after two years to fields of  $\frac{1}{2}$ –10 hectares and after 3 years to fields exceeding 10 hectares.

Further, all the agricultural and horticultural enterprises of the country must gradually substitute varieties liable to disease by resistant varieties. This substitution must be completed in 1937.

Modifications of these regulations are permissible until further notice, for the special culture of very precocious varieties.

All those occupied with the sale or exchange of potatoes are obliged to declare the name of the variety and its degree of resistance to potato wart disease.

The local police authorities may declare limited regions to be 'zones in danger of contamination' and may apply the above quoted regulations. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 6-8).

**Germany (Brandenburg).** — By Police Ordinance of 30 May 1933, relating to the campaign against the Pine Moth (*Panolis flammea*) the measures are made known that are to be taken for protecting human beings and animals against the dangers that may result from the use of the sprayers. Inter alia, it is forbidden during a period to be fixed by the official journal, to enter the lands subjected to the treatment, to gather berries, mushrooms, or grass on these lands, or to drive either cattle or bees on to such lands. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 26-27).

**Germany (Bremen).** — By Police Ordinance of 29 April 1933 the campaign of control of voles has been rendered obligatory. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 9).

**Germany (Hanover).** — By notification of the Delegation of the Stade circle, dated 29 May 1933, cherries intended for export to England must be free from cherry fruit-fly [*Rhagoletis cerasi*] and furnished with a number for checking purposes. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Juli 1933, 13. Jahrg., Nr. 7, S. 55).

**\*\*** By Police Ordinance of 19 June 1933, the use of lead arsenate is forbidden in orchards in the district of Stade, as from 25 June 1933. Receptacles which have contained lead arsenate products must be got rid of in such a way as to exclude all possibility of contact with human beings or animals. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 27-28).

**Germany (Upper Silesia).** — By Police Ordinance of 23 March 1933 new regulations relating to control of potato wart disease [*Synchytrium endobioticum*] have been issued for the district of Oppeln. A distinction is made between infected and threatened regions. The measures to be applied in infected regions may be, on special Decree, extended to the regions threatened with infection. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Juli 1933, 13. Jahrg., Nr. 7, S. 54-55).

**Germany (Thuringia).** — By the Police Ordinances of 14 and 15 March 1933 control of the Apple Little Ermine Moth (*Hyponomeuta malinellus*) has been rendered obligatory in the district of Camburg. Control must be extended to hedges and shrubs infested by this insect and in the neighbourhood of the fruit trees.

In certain communes, expressly indicated, all the fruit trees must be treated for prevention of the pest. With this object an application is recommended before the opening of the flower buds of carbolineum at 8 to 10 per cent., and after flowering, of lead arsenate at 0.4 per cent. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V, Nr. 1, S. 30-31).

**Western Australia.** — By Proclamation of 11 May, 1933 the Proclamation published in the *Government Gazette* on 1 May, 1931 prohibiting the bringing into the State of seeds of *Phaseolus vulgaris*, *Ph. lunatus* and *Ph. coccineus*, has been revoked. (*Government Gazette of Western Australia*, Perth, May 19, 1933, No. 24, p. 736).

**Belgium** (1). — By Ministerial Decree of 14 July 1933 the import into Belgium of peaches, including nectarines, and of fresh apricots of whatever origin or shipment, is authorised only if it appears from the examination conducted by the Belgium Special Plant Disease Service, carried out at the expense of the importers, that the shipments are free from 'worm'. By 'worm' should be understood the larva of fruit flies belonging to the family of the *Trypetidae*, as well as the larva of *Anarsia lineatella*, *Cydia molesta* and *Conotrachelus nenuphar*.

It will be possible to consign the parcels only through the Customs Offices of Antwerp (offices 2, 3 and 4), Brussels (offices 1, 2, 3), Haren-Aviation, Liège, Erquelinnes (station), Esschen (station), Montaleux (Mouscron), Mouscron (station), Montzen (station) and Quévy (station).

Consignments not recognised as exempt from 'worm' at the Offices of Erquelinnes, Esschen, Montaleux, Mouscron, Montzen and Quévy, will be rejected.

Consignments not recognised as exempt at the Offices of Antwerp, Brussels, Haren-Aviation and Liège, will be destroyed by burning at the expense of the importers.

Any person who reports the presence of 'worm' in his orchards or in his packing sheds for peaches, nectarines or apricots, is expected to make a declaration to the Burgomaster of the commune. The latter will immediately inform the Minister of Agriculture.

Infringements of the preceding provisions will be punished with the penalties prescribed in Art. 21 of the Royal Decree of 23 May 1929.

**Cameroon (French).** — The Ministerial Decree of 4 April 1933 containing regulations for the cultivation of coffee in French Cameroon prescribes, in particular, that any planter who has noted presence of *Hemileia vastatrix* must, as a matter of compulsion, make a declaration to the administrative authority. (*L'Agronomie Coloniale*, Paris, juillet 1933, 22<sup>ème</sup> année, n° 187, p. 26-27).

(1) Communication from the Ministère de l'Agriculture et des Classes Moyennes of Belgium to the International Institute of Agriculture.

**French Colonies.** — By Decree of the Minister of the Colonies, dated 1 April 1933, the first paragraph of Art. 5 of the Decree of 27 February 1922 containing prescriptions as to the measures to be taken against the coffee-berry borer (*Stephanoderes hampei*) has been specified as follows:—

The provisions of the present Decree are applicable to the products enumerated in Art. 1 and presented for importation into or transit across Indo-China, Madagascar, New Caledonia, Guadeloupe, Martinique, French Guiana, Réunion and French India.

All provisions contrary to the present Decree have been cancelled. (*Journal Officiel de la République Française*, Paris, 11 avril 1933, LXV<sup>ème</sup> année, n° 86, p. 3723-3724).

**Spain.** — By 'Orden' of 16 March 1933, and only under reserve of suspension if the state of the shipments makes it advisable, the consignments of dry or desiccated fruits coming from the port of Hamburg will be admitted into Spain only if accompanied by a copy of phytopathological certificates delivered by the experts of the country of origin, and certified as in order by German experts of the port of Hamburg. These certificates relate to each of the lots making up a consignment. In addition these consignments must possess the certificate of phytopathological inspection issued by the experts of the port of Hamburg, and at the time of the inspection made by Spanish Phytopathological Service the conditions must also be found to be satisfactory. (*Gaceta de Madrid*, Madrid, 23 mayo 1933, año CCLXXII, tomo II, núm. 143, pág. 1364).

\* \* An 'Orden' of 20 June 1933 establishes the measures relating to locust control: immediate declaration of the existence of locusts, determination of the limits of the invaded land, and the other requirements imposed by the Law of 21 May 1908. (*Gaceta de Madrid*, Madrid, 28 junio 1933, año CCLXXII, tomo II, núm. 179, págs. 2298 y 2299).

**France.** — By Decree of 14 May 1933 regarding measures for checking the spread of the Colorado beetle [*Leptinotarsa decemlineata*], article 15 of the Decree of 13 February 1923 has been completed as follows:—

'Ministerial Decrees, delivered in the same forms, will determine the conditions in which potato tubers, recognised as healthy, clean and properly graded, may be transported to their destination in immune regions'. (*Journal Officiel de la République Française*, Paris, 16 mai 1933, LXV<sup>ème</sup> année, n° 115, p. 5079-5090).

\* \* By Ministerial Decree of the same date potato tubers recognised as healthy, clean and properly graded, gathered the preceding year in zones infested by the Colorado beetle or in protection zones may by way of exception be transported to their destination in immune regions during the period between 15 May and 1 July of each year, with due regard for the observation of the regulations laid down by the Decree of 15 March 1932 [see this *Bulletin*, 1932, No. 4, p. 57-58]. (*Ibid.*, p. 5080).

\*\*\* By Ministerial Decree of 16 May 1933 the list of countries infected by potato wart disease (*Synchytrium endobioticum*) enumerated in article 1 of the Ministerial Decree of 6 June 1924, modified by the Ministerial Decrees of 20 December 1924, 2 November 1925 and 15 September 1927 [see this *Bulletin*, 1927, No. 11, p. 77], is completed by: Portugal. (*Ibid.*, 19 mai 1933, n° 118, p. 5210).

\*\*\* By Circular No. 549 the General Direction of the Service for the industrial exploitation of tobacco has extended to the agricultural, horticultural, viticultural and other Syndicates, the sale in half litre tins, of titrated extracts of nicotine, at 500 grams of nicotine a litre. At the same time it has modified the sale price of these extracts and has reduced the minimum quantity of extracts admitting of reductions or rebates. (Ministère de l'Agriculture. Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 1<sup>er</sup> juin 1933, année 1933, n° 11, p. 225-226).

\*\*\* By Decree of 18 July 1933 and in modification of the prohibition contained in Art. 1 of the Decree of 8 March 1932 [see this *Bulletin*, 1932, No. 4, p. 57] the transit across French territory of living plants and parts of living plants including fresh fruits (trees, shrubs, nursery stock, cuttings and other plant parts) originating in or coming from countries infected with San José scale (*Aspidiotus perniciosus*), may be authorised under the conditions fixed by Decree of the Minister of Agriculture.

The transit across French territory of living plants and parts of living plants indicated above, but originating in countries not infected by San José scale, is authorised only under the conditions fixed by Decree of the Minister of Agriculture. (*Journal Officiel de la République Française*, Paris, 29 juillet 1933, LXV<sup>ème</sup> année, n° 176, p. 8027).

\*\*\* By Ministerial Decree of 18 July 1933, exceptionally and by way of modification of the prohibition included in Art. 1 of the Decree of 8 March 1932, import permits may be granted under certain reserves to horticulturists regularly registered at the State Plant Inspection Service provided they apply for such permits to the Ministry of Agriculture, for lily bulbs of Japanese origin. (*Ibid.*, p. 8028).

\*\*\* By Ministerial Decree of 22 July 1933 - in view of the fact that the presence of San José scale has been reported on fresh fruits coming from Spain - the prohibition contained in Art. 1 of the Decree of 8 March 1932 is applicable to shipments coming from Spain.

The entry into and transit through France of fruits coming from Spain may take place, under the supervision of the Plant Protection Service, through the Customs Offices designated by the Decree of 9 May 1932 [see this *Bulletin*, 1932, n° 6, p. 100] and by that of Cerbère (*Ibid.*, 23 juillet 1933, n° 171, p. 7678).

\*\*\* A Ministerial Decree of 24 July 1933 fixes the conditions of transit across French territory of living plants and part of living plants, including fresh fruits, originating in or coming from countries infected with San José scale. (*Ibid.*, 29 juillet 1933, n° 176, p. 8027-8028).



**Italy.** — By Ministerial Decree of 8 June 1933 an obligatory Consortium (Syndicate) of olive growers has been formed in the province of Chieti, the purposes of which include the control of diseases and pests of the olive. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 14 giugno 1933, anno 74<sup>o</sup>, n. 138, p. 2501).

\* \* A Ministerial Decree of 10 July 1933 establishes the phytosanitary regulations to be followed temporarily for the importation from abroad of potato varieties intended exclusively for planting for the season of 1933-1934. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 15 luglio 1933, anno 74<sup>o</sup>, n. 163, pp. 3189-3191).

\* \* By Ministerial Decree of 8 August 1933 the commune of Marsaglia, in the province of Cuneo, has been declared to be infested with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 22 agosto 1933, anno 74<sup>o</sup>, n. 194, p. 3758).

**Morocco (French Zone).** — By Dahir of 29 April 1933 (4 moharrem 1352) a fee has been instituted for cost of sanitary inspection at the time of importing and exporting plants, parts of plants or plant products. This is applicable also to insects and to cryptogams of economic value allowed to enter or in transit across the French Zone of Morocco, excluding cryptogams intended for therapeutic use or medical experiment, and of insects or plants for collections. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel* Rabat, 9 juin 1933, XXII<sup>ème</sup> année, n<sup>o</sup> 1076, p. 500).

\* \* A Vizirial Decree of 8 May 1933 (13 moharrem 1352) regulates the importation of seeds of forage plants into the French Zone of Morocco. Seeds of forage plants, and in particular those belonging to the genera *Medicago*, *Trifolium*, *Lotus* and *Anthyllis* are subjected to an examination with the object of ascertaining if they contain any *Cuscuta* seed. (*Ibid.*, p. 507).

\* \* A Vizirial Decree of 9 May 1933 (14 moharrem 1352) relates to the release of certificates of sanitary inspection on the exporting of plants, parts of plants or plant products. (*Ibid.*, p. 500-501).

\* \* A Vizirial Decree of 17 May 1933 (22 moharrem 1352) fixes the rate of the fee for cost of sanitary inspection for the import into French Zone of Morocco of plants, parts of plants and vegetable products. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 16 juin 1933, XXII<sup>e</sup> année, n<sup>o</sup> 1077, p. 527).

\* \* By Decree of the 'Directeur' of Waters and Forests, dated 20 May 1933, owners and holders of land situated within the territory of the Bureaux of Native Affairs of Kelaa des Sless and Tafrant (region of Fez), are authorised to destroy wild boars on their land, at any time and by any means, except fire. Boars killed in these conditions may not however be transported, hawked or exposed for sale. The present Decree will remain effective until the last day of the close season of 1933. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 2 juin 1933, XXII<sup>ème</sup> année, n<sup>o</sup> 1075, p. 489).

\* \* The Dahir of 9 June 1933 (15 safar 1352) fixes *inter alia* the powers and duties of the Service of Plant Protection and Phytosanitary Inspection. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 14 juillet 1933, XXII<sup>ème</sup> année, n° 1081, p. 630-631).

\* \* The Dahir of 1 July 1933 (7 rebia I 1352) fixes the powers and duties of the officials and agents of the technical staff of the said Service. (*Ibid.*, p. 637).

\* \* A Vizirial Decree of 1 July 1933 (7 rebia I 1352) regulates the organisation of the staff of the General Administration of Agriculture, Commerce and Land Settlement which includes that of the Service of Plant Protection and Phytosanitary Inspection. (*Ibid.*, p. 643-653).

\* \* Another Vizirial Decree of the same date fixes the grades and salaries of the staff of the said Service. (*Ibid.*, p. 653).

\* \* A third Vizirial Decree of the same date is concerned with the charges collected by the technical staff of the said Service. (*Ibid.*, p. 653).

**Rumania (1).** — By Ministerial Decision No. 37793 of 30 May 1933, fresh pears and apples intended for export must be accompanied by a plant health certificate released by one of the following institutions:— Section of Plant Protection of the Rumanian Institute of Agricultural Research, Plant Protection Service of the Ministry of Agriculture and Public Lands, Plant Protection Station of Bes-sarabia.

The inspectors of the National Institute for Exportation will not allow these products to leave the country unless they are accompanied by a plant health certificate.

The fruit growing areas of the country are subject to the control exercised by the bodies belonging to the Plant Protection Service.

**Saar Basin.** — In virtue of the Police Ordinance of 2 February 1933 and with the object of avoiding the introduction of San José scale (*Aspidiotus perniciosus*), it is prohibited to import living plants or parts of plants coming from America, Australia including Tasmania and New Zealand, the Hawaii Islands, Japan, China, India, Mesopotamia, Union of South Africa, Austria, Hungary and Rumania. This prohibition also applies to any object which has been used to pack or to keep any such living plants or parts of plants.

Fresh fruits and their residues coming from countries other than these indicated may be imported only through certain authorised Customs Offices and on condition that the consignments are accompanied by an official certificate of the country of origin, a model form of which is attached to the text of the present Ordinance.

Consignments not in accordance with these regulations will be sent back or, if recognised as infested with San José scale, destroyed on the spot by burning. (*Antliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1933, Bd. V., Nr. 1, S. 29-30).

(i) Communication from the Ministry of Agriculture and Public Lands of Rumania to the International Institute of Agriculture.

**Tripolitania.** — By Decree of the Governor, dated 24 June 1933, taking effect as from 1 August 1933, the working of nurseries, the industry and trade in plants, parts of plants and seeds intended for cultivation, are limited to firms or persons who receive express authorisation by Decrees of the Governor.

The authorisation to continue undertakings already in existence or to establish new ones will be granted by the Government of the Colony on a favourable technical report being received from the Phytopathological Section of the Royal Institute for Agricultural Services which will for this purpose make the necessary enquiries.

This authorisation may be suspended for an indefinite period, when it has been shown, as the result of periodical inspections, which must be held by the Phytopathological Section in respect of the nurseries of the Colony, that the products of these nurseries are attacked by parasites of diseases either dangerous or contagious. (Governo della Tripolitania. Direzione Affari Economici e Colonizzazione. *Notiziario Economico*, Tripoli, maggio-giugno 1933, anno VI, n. 5-6, pp. 24-25, in *Tripolitania*, Tripoli, giugno 1933, anno III, n. 6).

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# INTERNATIONAL BULLETIN

## OF PLANT PROTECTION

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### DISCOVERIES AND CURRENT EVENTS \*

French North Africa: The Desert Locust (*Schistocerca gregaria*) (1).

#### ALGERIA.

- 1 June 1933. -- Hatching of larvae reported over 3 hectares at the Douar Benian (Mascara).  
A swarm settled at Tiriou, Douar Ouzera (Berrouaghia) and laid eggs over 1 ½ hectares.  
Hatching reported from 1-5 June at Oued Sehihi, Chabet Rouh, Oued Kheneg, Oued Zemlane, Aïn Nehar, Mahouna, Benredja, Hadja Zerga, Cheniguel, Dra Maul Karrouchia (Sidi Aïssa).  
Hatching reported from 1-5 June at the Douar Magra (Barika).  
Bands of hoppers of the 6th stage reported at the Douar Berhoum (Barika) and Ouled Adda Guebala (M'Sila).  
Hopper bands reported in the region of Dermoune, Douar Kimmel (Aurès).  
A pink swarm, coming from the S., settled at 10 a. m. at El-Amra (Khenchela).  
Left at 2 p. m., flying towards the N. N. E.  
Hopper bands reported at Djebel Goua (Khenchela) travelling towards the N. N. E.  
Hatching reported at Ouled Haniza and Krabid, Douar Ziana (60 kilometres S. S. E. of Tablat).  
Egg-pods reported on this day covered 250 hectares in the mixed Commune of Chélif.  
Hopper bands reported from 1-4. June at the Douars Oulache and Tadjemout (Aurès), travelling towards the N. N. W.  
Hatching reported at the Douar Tadjemout (Aurès).  
Hatching reported from 1-5 June in the region of Chellala des Adaouras (Sidi-Aïssa).  
Hatching reported in the region of Turenne.
- 2 June 1933. — Hatching reported at Keskis and Oued Sisseb, Douar Aïn-Tiziret (Aïn-Bessem).  
Hatching reported at the Douars Aïn-Hazem, Metnane and Sidi-Zouikia (Aïn-Bessem).  
Hatching reported at the Douar Aziz-Boghari.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

Bands of hoppers of the 6th stage reported from 2-7 June at the Douars Menaa and Tighanimine (Aurès).

Hatching reported at Kedah Firas, Douar Oued Labiod (Aurès).

Hopper bands reported in the Maadid, travelling N.

Hatching reported at Ouled Banedah (4 kilometres N. E. of Aumale).

General hatching reported at Toumiat, Douar Ras-el-Aïoun (Belezma).

Hatching reported at the Douar Djendel and Ouamri (le Djendel).

- 3 June 1933. — Hatching reported in various places in the Oueds Sahe and Soummam (Akbou).

Hatching reported at the Douar Ouled-Hellal (Boghari).

Hopper bands reported at the Douar Barika, 10 kilometres South of Barika, travelling N. E. and E.

Hatching reported at the Douar Tourtatsine (Tablat).

Hopper bands reported near Kherba.

Egg-pods reported at different points in the Commune of Descartes, covering 300 hectares.

Hopper bands reported near the Algerian Moroccan frontier (Marnia).

- 4 June 1933. — Fairly large pink swarms, coming from the S., flew over Barika, carried by the south wind.

A large swarm, coming from the S., flew over Boughezal, Douar El-Outayal (Aïn-Touta) between 2 and 5 p. m. flying N. W.

Hatching reported at the Douar Sidi-Sada (la Mina).

Large pink swarms, coming from the S. E., reported at Marroket, Raselerg, Miribel and Oued-Tabaloulet (El-Goléa) flying N. W.

Hatching reported at Draa Rass, Douar Bouzina (Aurès).

A very large pink swarm, coming from the S., settled at 3.30 p. m. at Laghouat. Part of this swarm left on the 5 at 1.45 p. m. flying N.

Hopper bands reported at Saora and Laoussif, Douar Berhoum (Barika) travelling E.

Bands of hoppers of the 5th stage reported at Oued Hamza and Aïn-Teboucha (S. E. of Barika) travelling N.

A pink swarm, coming from the S., flew over Oued Ghebbone, region of Djellal (Khenchela), flying N. W.

Egg-pods reported at Kerdja in the Oueds Sebaou and Aïssi (Tizi-Ouzou) over one hectare.

- 5 June 1933. — A pink swarm, coming from the S., settled in the evening at Mechta Tirchiouine, Douar Ouled Fatma (Belezma). Left on the 7, flying E. S. E.

Large pink swarms settled at 7 a. m. at El-Goléa. Left at 4 p. m. flying towards the N. W.

Hatching reported at the Douars Siouf and Ouled Hellal (Boghari).

Hatching reported at Kedah Firas, Douar Oued Taga (Aurès).

A pink swarm, coming from the S., passed at 10 kilometres S. S. E. of Barika, flying N. N. E.

Hatching reported at Marmala, Hamiet el Miet, El Atouta, Remilia and Aïn-Aïsneur, Douar Barika (Barika).

Hatching reported from 5-8 June at Ouldja el Khodra and Melgueloui, Douar Tadjemout (Aurès).

Hopper bands reported at Douar Oulache (Aurès) travelling N.

A large pink swarm, coming from the S., settled at 3 p. m. at Timimoun. Left on the 7.

Hopper bands reported at Oued Khelidj, Douar Gosbate (Barika).

Hatching and hopper bands reported at the Douars Oued-Berdi, Aïn-Tiziret, Sidi-Zouikia, Sidi-Khelifa and Aïn-Hazem (Aïn-Bessem).

Hopper bands reported at the Douar Beni-Ouassine (Marnia).

Hatching reported at Sokeure and Ouled Bakir (l'Arba).

6 June 1933. — Large pink swarms, coming from the S., settled in the evening at El-Outaya and at 5 kilometres S. of El-Kantara (Aïn-Touta).

Large hatching reported at Fontaine des Gazelles, Douar El-Outaya (Aïn-Touta).

Hatching reported at Chaïbia, Douar Chouarchi (Cassaigne).

Inconsiderable hatching reported at Harchaïa and Fritis (25 kilometres S. and 15 kilometres S. E. of Méchéria).

Very large hopper bands coming from S. and S. W. reported at Laghouat.

Hatching reported from 6-8 June at the Douar M'doukal (Barika) of eggs reported on 21 April.

Hatching reported between 6-10 June at Khenègue, Oued Zemlane and Aïn-Mehar (Sidi-Aïssa).

Hatching reported from 6-10 June at Draa Rass, Douar Bouzina, and Mezgoub, Douar Oued Taga (Aurès).

Hatching and hopper bands reported from 6-12 June at the Douar Berhoum (Barika).

Hatching reported at the Douar Ziana (Tablat).

Hopper bands reported at the Douars Tourtatsine and Mezrenna (Tablat).

Hatching reported from 6-8 June at Oued Seghir, Badib-el-Ahmar and Labiod, region of Nabah Eddib (Barika) from eggs laid on 21 April.

Hopper bands coming from the S. reported in the region of M'chouneche (Aurès).

An inconsiderable pink swarm, coming from the S. W., settled at 10 a. m. at Saora Heejir Ezzal, Tazna, region of Aïn-el-Hadjar (Barika).

Left at midday, flying N. E.

Hatching reported at the Douar Beni Chaïb (Chéelif).

Isolated pink adults, coming from the S., reported at the Douars Hamnia and Bou Teleb (les Rhira).

• A yellow swarm reported from 6-11 June in the mixed Commune of Remchi.

7 June 1933. — A pink swarm, coming from the S. E., settled at 4 p. m. at St Joseph and Badrian (El-Goléa). Departed on the 8th at midday, flying N. W.

Hatching reported in the region of Aïn-el-Hadjar (Barika).

Large hatching reported at the Douar Magra (Barika).

Hatching reported in the region of Aïn-Defila (Barika).

Hatching reported at the Douars Tacheta and El-Aneb (les Braz).

Hopper bands reported at the Douar Beni-Ghomérane (les Braz).

Hatching reported from 7 June at Bougie.

A yellow swarm settled at 6 kilometres from Mascara, covering an area of 25 kilometres, laying eggs.

Egg-pods reported near Montagnac over an area of 50 hectares.

Hatching reported at Ouillis, Douar Chouaci (Cassaigne).

Hatching reported at Terfaïa el Maada, Draa Bechmine, Djerf Lahmar, Douar Aziz and at Sidi-Hamed, Douar Siouf (Boghari).

8 June 1933. — Hopper bands reported at Laoussej and Hedja Ezzal, region of Ain-el-Hadjar (Barika), travelling E. N. E.

A pink swarm, coming from the S., settled at 2 p. m. at Nebka, 7 kilometres from Nebch Eddib (Barika).

Hopper bands coming from the W. (Morocco) reported at the Douar Beni Ouassine (Marnia), travelling N. E.

Hatching reported at the Douars Ouled Chaoa and Ouled Bou Abca (la Mina).

Hatching reported near the Medjana (Bibans).

Hopper bands coming from the S. (M'sila) reported at the Douars Maadid and Taglaït (Maadid).

Hatching reported at Azlat Kahil and Oued Boularnas, Douar Ouled Hellal (Boghari).

Hatching reported at Ain-Deze, Douar Madena (Frenda).

9 June 1933. — Egg-pods reported near Berthelot.

Hatching reported at 4 kilometres to the S. of Berthelot over an area of 2 hectares.

Large hatching reported between Harchaïa and Nocania (28 kilometres S. of Méchéria).

Inconsiderable hatching reported in the Oued Sidi-Ahmed, Douar Azefoun (Port-Gueydon).

Pink swarms, coming from the S. S. E., settled in the morning at In-Salah and departed at 12 a. m. flying N.

A large pink swarm, coming from the S. E., settled at 3 p. m. at Aoulef (In-Salah).

A large pink swarm, coming from the S. W., settled at 5 p. m. at Daya and Foun Zgag, region of Ain-Defila (Barika) covering about one thousand hectares.

A pink swarm, coming from the S., settled at 10 a. m. at Berrian (40 kilometres N. of Ghardaïa).

A pink swarm, coming from the S., settled at 12 a. m. at the Douar M'doukal (Barika), flying N.

Hatching reported near Trolard Taza (Téniet-el-Haad).

Hatching reported at Kouberita and Boulezazène, Douar Siouf (Boghari).

10 June 1933. — A pink swarm, coming from the S. E., settled at 12 a. m. at In-Salah.

Inconsiderable hatching reported between La Pointe Rouge and El Marsa (Ténès).

A very large pink swarm, coming from the S., settled at 8 a. m. at Metlili (28 kilometres S. of Ghardaïa). Left on the 12th at 1 p. m., flying N. Hatching reported at Touglaguel, Boufras and Azba Zoga, Douar Tourtatsine, and Behair, Douar El-Ouzanna (Tablat).

Hopper bands reported near Titen Yahia and Les Pins (le Télagh).

Hatching reported at Bouhamama and Aïn Defla, Douar Djebel Louh (le Djendel).

Large hopper bands covering  $12 \times 8$  kilometres, reported at Aïn-el-Ibel (Djelfa).

Large hopper bands, coming from the S. and S. W., reported at Messad (Djelfa).

Large pink swarms reported at Aïn-el-Ibel, Zeira and Messaad (Djelfa).

Hopper bands reported at the Douars Hassasna Gheraba, Gheragas and Tiffrit (Saïda).

Hatching reported at the Douar Mihoub (Aïn-Bessem). Egg-pods reported in the Commune of Aïn-Taya over an area of 30 hectares.

Hatching reported at the Douars Kef Lakdar and Tirghane (Aïn-Boucif).

11 June 1933. — Hatching reported at Ouled Sehil, Douar Ouled Anteur (Boghari).

Hatching reported at Mouas, Douar Keelna and at Tagremaret (Frenda).

A pink swarm, coming from the S. W., settled at Tkout (Aurès), flying N. E.

Hatching reported from 11-15 June at the Douar Oued-Taga (Aurès).

Hatching and hopper bands reported from 11-15 June at Khenègue and Zemlane (Sidi-Aïssa).

Hatching reported at the Douars Hamma and Bou-Taleb (les Rhira).

Hatching reported near the village of Arba.

12 June 1933. — A large pink swarm, coming from the S. E., settled at 11 a. m. at Reggan (In-Salah). Left on the 12th, flying N.

A large pink swarm, coming from the E., settled at Aïn-Sefra.

Numerous pink swarms, coming from the S., settled at Naama and Mocta Deli (Méchéria).

Large pink swarms, coming from the S., settled at Arbaoccat (80 kilometres S. W. of Géryville).

A pink swarm, coming from the S. W., settled from 12 a. m. to 2 p. m. at El-Goléa. Left on the 13th at 4 p. m., flying S. W.

Final hatching reported at Duperré.

A pink swarm, coming from the S., settled at Taouiala (Aflou).

Hatching reported at Oued-el-Braoui, Douar Aziz (Boghari).

13 June 1933. — A large pink swarm, coming from the S., settled at Taïba (30 kilometres E. of Géryville).

Large pink swarms, coming from the S., settled at Sebgag and Oulad Sidi-Hamza (Aflou), flying N.

Hopper bands reported from 13-17 June at the Douar Berhoum (Barika).

Inconsiderable hatching reported at Oued Lauagh, Douar Gosbate (Barika).

Hopper bands reported at the Douars Tighanimine and Rossina (Aurès).

14 June 1933. — A pink swarm, coming from the N. E., settled at 5 p. m. at Timi (Adrar).

A large pink swarm, coming from the S. E., settled at 1 p. m. at Deldoul Barka (Timimoun).

Bands of hoppers of the 6th stage reported at Aïn-el-Hadjar (Barika), travelling N. E.

Hatching reported at the Douars Bou-Taleb and Hamma (les Rhira).

- 15 June 1933. — Hatching reported in the Communes of Dellys and Rébeval.

A pink smarm, coming from the S. E., settled at Beni-Abbès.

Large pink swarms, coming from the S., settled at Aflou over an area of 50 kilometres.

A large pink swarm settled in the evening at Tabelbala (Saoura). Left on the 16, flying S. W.

Large hopper bands reported at El-Khadra, Taouiala, Dra Bouamoud, Khacha, Arara, Oued-Morra, Keneg El Himeur (Aflou).

Large pink swarms reported between Zenina and Géryville.

Hatching reported at the Douars Aïn-Tiziret, Metenane and Oued-Berdi (Aïn-Bessem).

- 16 June 1933. — Large hopper bands reported near Aflou.

Hopper bands reported from 16-20 June at Oued Zemlane and Djebel Graten (Sidi-Aïssa), travelling N.

Hopper bands reported at the Douars Tacheta and Zougara (les Braz).

Hatching reported from 16-20 June at Coudiat Trab, Kedach Firas, Mezgoub, Teniet Talma, Douar Oued-Taga (Aurès).

- 17 June 1933. — Hatching reported at the Douars Tourtatsine and Tiara (Tablat).

Hatching and hopper bands reported at les Bibans.

Hopper bands reported at the Douars Beni-Oughlis, Timezrit and Fenaia (Soummam).

- 18 June 1933. — A large pink swarm, coming from the E., settled at Aïn-Sefra.

A large pink swarm, carried by the S. wind, settled at Arris (Aurès).

Inconsiderable hatching reported in the mixed Commune of Sersou.

- 19 June 1933. — A pink swarm, coming from the S. E., settled at 5 p. m. at Adrar.

Hopper bands reported at Titen Yahia, les Pins and at the Douar Angad (le Télagh).

Scattered hatching reported from 19-22 June in the Communes of Fort-de-l'Eau, Cap Matifou, Aïn-Taya, Rouiba (neighbourhood of Algiers).

- 20 June 1933. — A very large pink swarm, coming from the E., settled at Aïn-Sefra.

Inconsiderable hatching reported at Touadjour (15 kilometres S. of Méchéria).

Hopper bands reported at Menitna, Oued Sebih and Beldjelbane, Douar Zemlane and at Khenizat and Dra Sid el Mihoub, Douar Taфраout (Sidi-Aïssa).

Large bands of hoppers of the 6th stage, coming from Morocco, reported at Zoudj el Beghal (Marnia).



Hatching reported at the Douars Aïn-Hazem, Metenane, Oued-Berdi, Aïn-Tiziret (Aïn-Bessem).

Hatching reported from 20-24 June at Staouéli, Sidi-Ferruch (near Algiers).

- 21 June 1933. — Large pink swarms, coming from the S. E., settled on the 21 and especially on the 22 at Fort-Polignac.

A pink swarm, coming from the W., settled at Macta Haidoussa, Douar Merouana (Belezma). Left, flying S. E.

Hatching reported at Rivet (near Algiers).

A very large pink swarm settled at Djelfa. Left on the 23, flying S.

- 22 June 1933. — Hatching reported near Saïda and Bou-Tlélis.

- 23 June 1933. — A rather large pink swarm, coming from the S., settled at Victor Duruy (Aïn-Touta). Left flying W.

A very large pink swarm, coming from the S., settled at Colomb-Béchar.

A pink swarm, coming from the S. E., settled in the evening at Tabelbala (Saoura).

Large hopper bands reported at the Maadid.

A pink swarm, coming from the W., settled on the 23 and 24 at the Douar Beni-bou-Saïd (40 kilometres S. of Marnia). Left on June 25.

- 24 June 1933. — A pink swarm, coming from the S., settled at the Douar Briket (Aïn-Touta).

Isolated pink adults, carried by the S. wind, settled at the Douar Oued Djenane (Aumale).

A large pink swarm, coming from the S., settled at Reveil Beni-Ounif. Left in the evening flying N.

Pink swarms reported in the Annexe of la Saoura.

Hatching and hopper bands reported in the mixed Commune of Les Bibans.

Inconsiderable hopper bands reported at Lapasset (Cassaigne).

- 25 June 1933. — A pink swarm, coming from the S., settled at Arris (Aurès).

Hopper bands reported at Tirman.

A rather large pink swarm, coming from the W., settled at Bou-Salem and Smail (Aïn-Touta). Left on the 26 in the afternoon, flying W.

Hopper bands reported at Adjeb, Douar Oued-Berdi (Aïn-Bessem).

- 26 June 1933. — A very large pink swarm, coming from the S., settled 10 kilometres S. W. of Géryville, flying N.

Hopper bands reported at the Douar Metarfa (M'sila).

- 27 June 1933. — A large pink swarm, coming from the N., settled at Tébessa between 1-2 p. m. flying S.

Large pink swarms reported at Aflou.

- 28 June 1933. — An inconsiderable pink swarm, coming from the W., at 6 p. m. flew over Géryville, flying E.

A pink swarm, coming from the S., settled in the evening at Ben Ghanem (oasis of Ghardaïa) and left, flying N.

A pink swarm reported at Tabelbala (Saoura).

Two pink swarms, coming from the S., settled at Zerouane and Ferkane, Douar Negrine (Tébessa). Left on the 29th, flying S.

- 29 June 1933. — Pink swarms, carried by the S. wind, reported in the regions of Aïn-Chabra, Kouf and Djebel Djebissa (Tébessa) flying N. W.
- 30 June 1933. — Inconsiderable bands of hoppers of the 5th and 6th stages reported at the Douar Tourtatsine (Tablat).
- 1 July 1933. — Hopper bands reported from 1 to 10 July along the Oued Zemlane, Douar Zemlane (Sidi-Aïssa).
- 2 July 1933. — Last hopper bands reported at the Douars Oued Djennane and Talguedid (Aumale mixed).
- 3 July 1933. — A large swarm coming from the E. settled in the evening near Aïn-Sefra.  
A large swarm coming from the S. settled at Géryville.
- 4 July 1933. — Last hopper bands reported at the Douars Oued Berdi and Matenane (Aïn-Bessem).  
A small swarm settled at Méchéria.
- 5 July 1933. — Large pink swarms coming from the S. (Djelfa) settled at the Douar Guelt es Stel (Aïn-Boucif).  
Last hopper bands reported in the mixed commune of Aflou.
- 7 July 1933. — A large swarm coming from the W. settled at Géryville.  
Last hopper bands reported in the mixed commune of Maâdid.
- 8 July 1933. — Last hopper bands reported at the Douars Medjana, El Achir and Teffreg (Les Bibans).  
One swarm left Aflou at midday, flying N.  
A large swarm coming from the E. settled at Aïn-Sefra. Left at midday on the 9, flying W.
- 10 July 1933. — Small hopper bands coming from the E. reported at the Douar Ouled Mareuf (Boghari).
- 14 July 1933. — A large swarm coming from the S. settled at Méchéria.
- 15 July 1933. — A medium sized pink swarm coming from the S. settled at 4 p. m. at Sidi Yanès (S. of Laghouat). Left at 9 a. m. on 16 July, flying N.  
Numerous pink swarms coming from the S. were reported on the territory of the mixed commune of Aflou during the first fortnight of July.
- 16 July 1933. — A large pink swarm settled at 6 p. m. at Dar Arous, between the Douars Djemmorah and Branis (Aïn-Touta).  
Pink swarms coming from the S. reported in the mixed commune of Bibans.
- 25 July 1933. — A large swarm reported in the Resaba (Beni-Abbès).
- 27 July 1933. — A large swarm passed and partly settled over Colomb-Béchar. The rest continued towards the S.

## TUNIS.

- 6 July 1933. — A large swarm coming from the N. W. passed Tozeur, flying S. E.

MOROCCO.

- 1 July 1933. — Very large pink swarms settled at Id Brahim, 100 km S. of Tiznit (region of Marrakech).  
A pink swarm of  $3 \times 5$  km settled at Bou Denib (region of the Confins). Large swarms reported in the Hamada du Rhir (region of the Confins). Hopper bands reported over 30 hectares to the S. of Taza.  
Small pink swarms left Ahl Chekka (region of Taza), flying W. S. W.
- 2 July 1933 — Pink swarms passed at Skoura and the Aït ben Haddou (region of Marrakech)
- 3 July 1933 — A dense swarm coming from the W. passed Beni-Lent, near Kef el Rhar (region of Taza). Part circled in the valley and crossed the Oued Amelil on the 4th, flying towards Tissa. The other part flew towards the Oued Amelil and passed the night at the Oued Msaben.  
A swarm coming from the N. passed Timezray (region of Taza), flying W. ; settled at Beni Abdallah, then departed towards Outat el Hadj.
- 4 July 1933. — A swarm coming from the S. circled over Tisgui ou Balloul (region of Marrakech).  
At midday swarms passed Igtherm (region of Marrakech), flying S. E.  
A very dense swarm settled on the Meknassa (region of Taza). Left across the Oued Cherif, then on 7 July flew E.  
A dense pink swarm of  $1 \times 5$  km settled on the valley of the Oued Leben, near Tissa (region of Fez) and departed towards the S. W.
- 5 July 1933. — A swarm coming from the E. settled in Reba Fouiki (region of Taza), then flew E. over the Oued Fehra.
- 7 July 1933. — A pink swarm coming from the S. passed Reggou (region of Taza).  
A swarm passed over El Aderj (region of Taza) flying from N. E. to S. W.
- 8 July 1933. — A pink swarm passed at 5 p.m. at Midelt (region of Meknès), flying E.  
A pink swarm coming from the S. E. settled at Tamghilt (region of Taza). Flew away to the S. on the 9th.
- 10 July 1933. — A pink swarm coming from the S. settled on the palm plantation of Igli at Missouri (region of Taza). Flew N. on the 11th.  
A pink swarm coming from the S. settled at Meghraoua (region of Taza) and later flew W.
- 11 July 1933. — A pink swarm coming from the S. settled in the Ouled Chérif (region of Taza). Departed on the 12th, flying S.
- 15 July 1933. — A very dense swarm coming from the E. settled at Bou Denib (region of the Confins).
- 16 July 1933. — A yellow swarm coming from the N. E. settled on the Aoulouz (circle of Taroudant).  
Two pink swarms settled on the palm plantation of Assas (circle of Tazzarine) and flew away N. E.

24 July 1933. — A pink swarm of  $2 \times 1$  km settled near Demnat (region of Marrakech).

A pink swarm of  $2 \times 1$  km coming from the N. W. settled at Ouled Ali (region of Taza).

A grey swarm of  $6 \times 3$  km coming from the N. E. settled at Gourrama (region of the Confins).

#### England: The Colorado Beetle (*Leptinotarsa decemlineata*) (1).

On the 21st August, 1933, a dead specimen of the Colorado Beetle was discovered on the landing stage at Tilbury, Essex, by an entomologist on the staff of the Ministry's Plant Pathological Laboratory. A search in the neighbourhood resulted in the discovery on 23rd August of two further specimens (one dead) in the soil of an allotment not far away. The most intensive inspection of all other potato crops in the district failed to disclose the presence of more beetles or of their larvae but as a precaution all field crops of potatoes within 16 kilometres of Tilbury in Essex, and within 8 kilometres of Gravesend in Kent were sprayed by the Government with an arsenical wash. The soil of the allotment in which the beetles were discovered was fumigated with carbon bisulphide, and as an additional precaution the treatment will be repeated during the autumn.

No Colorado Beetles have been discovered elsewhere in the British Isles.

The measures described above were taken under the Colorado Beetle Order of 1933 (Destructive Insects and Pests Acts, 1877 to 1927).

#### Angola: Locust Movements (2).

2 January 1933. — A large swarm passed over the civil post of Mutembo, district of Bié, coming from the N. and flying S. The colour of the locusts was not reported.

30 January 1933. — Immense swarms of the Red Locust (*Nomadacris septemfasciata*) coming from Humbe and Gambos, district of Huila, crossed the foot of the Chela mountain chain and invaded the following places:—Capangombe, Matambote, Munhino, Tampa, Bumbo and Circunlugira, district of Mossamedes.

3 February 1933. — Enormous hopper bands invaded the regions of Bruco, Gimba, Chitato and Chipia, district of Mossamedes. Various reports state that the upland plateau of Benguela continues to be invaded by locusts. On the high plateau of Malange (Baixa do Cassange) hoppers have developed to an extraordinary extent and have reached the winged state.

(1) Communication from the Ministry of Agriculture and Fisheries, London, official correspondent of the Institute.

(2) Communication from the Director of the Plant Pathological and Entomological Laboratory, Luanda, transmitted to the International Institute of Agriculture by the Government General of the Colony.

- 17 March 1933. — At the civil post of Otchinjau, civil circumscription of Gambos, district of Huila, the presence of a great number of hatching centres has been found; it has been estimated that six of these centres extend over 500 sq. km. The oldest of the locusts are two to two and half months old. They must be the Red Locust which, after having crossed the foot of the Chela mountains, are now infesting Capangombe, Munhino, Bruco, district of Mossamedes.

The region of Otchinjau, where the locusts have laid, is sandy land covered with grass and spiny shrubs, mostly Leguminous.

From January to the end of March no further information regarding locust movements in the Colony has been received.

- 15 April 1933. — An immense swarm coming from the S. passed over Sá da Bandeira, district of Huila, and again returned S.

- 16 April 1933. — A swarm settled in the vicinity of Humpata, district of Huila, and it is thought that it was the same that passed over Sá da Bandeira. This swarm flew W., leaving many insects by the way.

- 18 April 1933. — A dense swarm passed Vila Luzo, district of Moxico, coming from the E. It is not known in which direction it flew.

- 19 April 1933. — To the W. of Humpata, district of Huila, an enormous swarm appeared coming from the S. and flew towards the N.

A swarm passed over the civil circumscription of Moxico, district of Moxico, coming from the E. and N. E., and flew S. W.

During this month no other communications were received concerning locust movements.

None of the notes received during April 1933 mentions the colour of the locusts observed, but it is supposed that they were *N. septemfasciata*. In future the colour will be specified, as the necessary arrangements have been made in this regard.

### Cyrenaica: Some Insects Injurious to Crops (1).

Locusts. — Towards the middle of March 1933 individuals of *Schistocerca gregaria* Forsk. (type form) were found, while the solitary phase, which was rare and until the end of 1931 localised in the dunes of the shore of South Benghazi, was found to have extended considerably towards the east-north-east as far as Bir-Hakeim.

The result of the control measures undertaken in 1931 has been that in the following year and until the end of July 1933 no specimen of *Dociostaurus maroccanus* Thnb., was found in the region of Barce. I found, however, the presence of numbers of scattered adults of this species towards the end of June 1933 in the vicinity of Cyrene, Saf Saf and Zavia Tert.

(1) Communication from the official correspondent, Mr. G. KRÜGER, Entomologist of the Agricultural Services of Cyrenaica, Benghazi.

*Ocnogyna mutabilis* Trti. — During December 1932 and until the end of February 1933 the plain of Barce was invaded by enormous quantities of caterpillars of this moth. The most effective control means is crushing under-foot; but along the Barce-Sidi Rahuma road, where the masses of caterpillars in their fourth stage resembled very dense swarms of migratory locusts, control was carried out by means of spraying with 1 % sodium arsenite.

*Bryotropha plebejella* Z. — Towards the middle of May 1933 a very few caterpillars of this Microlepidopteron were found on tomatoes in the region of Benghazi. The species is already known in southern Europe, but in spite of this exportation was stopped.

#### Egypt: Locust Report (1).

No *Schistocerca gregaria* were reported from June to August, 1933.

Scattered individuals of the Egyptian grasshopper *Anacridium aegyptium*, in both the nymphal and the adult stage were observed.

The grasshopper *Euprepocnemis plorans* was the more conspicuous species in the Delta and was lately reported from the oasis of Kharga. Poisoned bait was successfully applied.

#### Eritrea: The Desert Locust (*Schistocerca gregaria*) and the Tropical Migratory Locust (*Locusta migratoria migratorioides*) (2).

Few swarms of *Schistocerca gregaria* and *Locusta migratoria migratorioides* were reported during July 1933. It appears from the examination of the individuals collected that they were however nearly ready for copulation.

Last year during the same month eggs had already been laid and the hoppers had dispersed into various localities in the western lowland plain and the upland plateau.

For the moment the number of swarms is limited and not such as to give cause for any alarm.

From 1 to 8 July 1933 some swarms of *L. migratoria migratorioides*, reddish-brown in colour, coming from beyond the Abyssinian frontier were reported in the territory of Barentú and along the Gasc.

On the 8th two swarms were reported: one consisted of *L. migratoria migratorioides*, coming from the Lower Barca, and flew over Ascerà, Cheren, in the direction of Agat; the other consisted of *Schist. gregaria*, reddish in colour, coming from the south-west, which flew over Om Ager in a north-easterly direction.

On the 10th reddish locusts (*Schist. gregaria*) coming from Adi Abò, Tigrai, settled near Tucul, then left on the 11th, flying towards Arresa, Seraè.

(1) Communication from the Director of the Entomological Section, Ministry of Agriculture, Egypt, to the International Institute of Agriculture.

(2) Communication from the official correspondent of the Institute, Dr. Rolando GUMORTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

From the 24th to the 31st numbers of reddish-brown and red individuals (*Schist. gregaria*) were reported in the eastern lowlands; they came from the north-west and were flying towards Acchelè Guzai (upland plateau).

Certain pastures and crops were damaged in the territory of Mahaio, Saganeiti.

### United States: The Dutch Elm Disease discovered in New Jersey (1).

The disease of elm trees caused by *Graphium ulmi* Schwarz was found in the State of New Jersey in June, 1933. This disease is usually referred to in the United States as the Dutch elm disease because it was first described from Holland. That it has spread over Germany, Belgium, and France, and parts of Norway and northern Italy, and was first found in England in 1927, is well known to plant pathologists.

In the summer of 1930, the Dutch elm disease was discovered in the United States. Three infected trees were found in Cleveland, Ohio, and one in Cincinnati, Ohio. These trees were promptly removed and destroyed.

During 1931, three more diseased trees were found in Ohio all near original infections. In 1932, no case of the Dutch elm disease was found in spite of extensive search around the two early infections at Cleveland and Cincinnati and very limited scouting elsewhere in Ohio and adjoining States. Early in 1933, however, a single diseased tree was found in Cleveland.

Until this spring these Ohio infections were the only ones known in the United States. On June 11, specimens of the disease on a single elm tree in Memorial Park in Maplewood was submitted to the New Jersey Agricultural Experiment Station by Mr. Richard Walter, Park foreman. These specimens were forwarded to the Dutch elm disease laboratory at Wooster, Ohio, where cultures were made and *Graphium ulmi* was isolated.

On June 26, the tree was dead and was taken down and burned. Immediate steps were taken to initiate an eradication campaign somewhat similar to the one carried out in Ohio. It is already evident that the New Jersey outbreak is more serious and the infection more widely distributed than that in Ohio. In the work of eradication the United States Department of Agriculture, the New Jersey State Department of Agriculture, State Department of Conservation and Development, and Experiment Station are all cooperating, and a squad of men has been delegated from one of the Citizens' Conservation Camps to assist in scouting and in the removal of trees.

Up to July 27, sixty-nine infected trees, from which the fungus has been isolated and determined in culture have been found in fourteen towns and cities, in three New Jersey counties all within twenty miles of New York City.

As rapidly as definite determinations are made the diseased trees are being removed and burned. While it is recognized that the task here undertaken is

(1) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

much more difficult than that successfully carried out in Ohio, the work of eradication is being pushed with all possible speed and there seems to be a fair chance of success.

### India: New Diseases found in Burma (1).

The following new diseases were found in Burma during the year 1932 :—

(1) *Diplodia natalensis* Ev. was the main organism causing the rotting of fruits of mangosteens (*Garcinia mangostana*) in storage. The fungus was also found on dead twigs and rotted fruits in the gardens and these probably formed the chief source of infection.

(2) *Glomerella cingulata* (Atk.) S. and S. caused the withering of the twigs of *Coffea arabica*. It was serious in one estate.

(3) Banded Sclerotial Disease of sugar-cane caused by a sterile mycelium was found for the first time to some extent. At Myitkyina it occurred on leaf blades, while at Pyinmana it was mostly confined to the leaf sheaths. No serious damage was done to the plants.

(4) A species of *Cercospora* was found on the leaves of *Sorghum* causing small red or yellow spots according to the variety of the host similar to those caused by *Colletotrichum lineola* Corda. The yield of grain did not appear to be affected by the disease.

Other diseases which occurred to a slight extent were :—

*Uromyces sojæ* (P. Henn.) Syd. on *Glycine hispida*.

*Alternaria brassicae* (Berk.) Sacc. on *Brassica* sp.

*Aspergillus flavus* Link on *Carica papaya*.

*Aspergillus niger* Van Tieghem on *Allium cepa*.

*Phakopsora phyllanthi* Diet. on *Phyllanthus distichus*.

### Southern Rhodesia: Locust Invasion, 1933 (2).

Monthly Report No. 8, July, 1933.

#### 1. — *Locusta migratoria migratorioides*, Rch. & Frm.

Neither reports nor specimens of the tropical form of the European Migratory Locust were received during the month.

The last survivors (all females) of adult specimens kept in cages since late in March died during July.

#### 2. — *Nomadacris septemfasciata*, Serv.

Most reports of flying swarms of the Red Locust came from the more low-lying parts of the country. No definite migration was observed, and no swarms were noted to be flying high.

(1) Communication from the official correspondent of the Institute, Mr. Maung Thet Su, B. A. S. (Class 1.), Mycologist, Department of Agriculture, Agricultural College, Mandalay, Burma, India.

(2) Communication from Mr. Mervyn C. Mossop, Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.



In a few cases winter cereal crops were stated to have been damaged, but, in general, threatened attacks were warded off successfully. As certain forest trees (e. g. *Brachystegia*) are expected to flush in August and to provide an adequate source of moisture for locusts, it is hoped that even less damage will be done during the remainder of the season.

Specimens taken from swarms during the month were red in colour, with the pink suffusion at the base of the hind wings about half developed.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Bulgaria.** — By Verbal Note No. 456 of 4 August 1933, the Royal Legation of Bulgaria in Rome notified the Royal Ministry of Foreign Affairs of Italy of the adherence of Bulgaria to the International Convention for Plant Protection, signed at Rome on 16 April 1929 [see this *Bulletin*, 1929, No. 4, pp. 50-55]; the notice of adherence is accompanied by the declaration required by Article 22 of the Convention.

In accordance with the terms of Article 23 of the Convention, this will take effect for Bulgaria as from 4 January 1934.

**China.** — A letter from the Shanghai Bureau of Inspection and Testing of Commercial Commodities, Ministry of Industries, Shanghai, dated 5 August 1933, informs the International Institute of Agriculture that the National Government of the Republic of China is planning to establish a Plant Quarantine Service in the different ports of the country.

**Spain.** — In accordance with the Decree of 17 March 1933 any forests of which there seems reason to fear the disappearance, or in which there is risk of an appreciable reduction of products or output, in consequence of damage caused by animals or cryptogams, will be regarded as contaminated with forest enemies.

All matters relating to the control of such forest enemies, the phytopathological inspection of forest plants and products, also the official declaration of forest diseases and pests and the adoption of protection and control measures, will be directly dependent on the General Administration of Forests, Fisheries and Game. The Administration will also be responsible for taking the necessary steps to prevent the spread of the trouble by regulating the importation, circulation and sale of forest seeds, plants and products coming from places where the presence of any disease or pest liable to cause damage to forests has been ascertained.

The Municipalities will be required to inform the General Administration of Forests, Fisheries and Game of any disease or pest which makes its appearance within the forest areas under their jurisdiction. Owners or holders of forest lands are required to inform the authorities of their Municipality of any disease or pest observed on their land. This duty will devolve on the Civil Guard and

any persons responsible for rural policing in the case of forests situated within their jurisdiction.

In forests of public utility the work of protection and control of diseases and pests will be carried out entirely at the expense of the State. In other forests belonging to Corporations or private persons, whenever the importance and the nature of the case demands it, the State will provide for the technical direction of the control measures, the apparatus and machines and the necessary materials; the wages of the workers will be chargeable to the respective owners. (*Gaceta de Madrid*, Madrid, 23 marzo 1933, año CCLXXII, tomo I, núm. 82, págs. 2164 a 2166).

**France.** — By Ministerial Decree of 1 July 1933 permission is granted, with certain reservations, from 15 May to 25 September of each year, to the 'Syndicats de défense contre les ennemis des cultures', to send to regions not infested with the Colorado beetle [*Leptinotarsa decemlineata*] potatoes which are sound, clean and properly graded and have been harvested during the period specified above on land belonging to members of the said Syndicates, either in zones of protection or in zones infested with the beetle, except in the latter case if the potatoes come from fields in which the beetle is known to be present, the transport of such potatoes being strictly prohibited. (*Journal Officiel de la République Française*, Paris, 4 juillet 1933, LXV<sup>ème</sup> année, n° 155, p. 6968-6969).

**Italy.** — By Ministerial Circular No. 378 of 13 July 1933 the regulations to be observed in the exportation of plants, plant parts and horticultural products to England were specified. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 15 agosto 1933, anno V, n. 16, pp. 3106-3107).

\* \* \* The Royal Decree Law No. 1051 of 29 July 1933 gives full and entire effect to the Treaty of Commerce and Navigation between the Kingdom of Italy and the Republic of Costa Rica, settled at San José on 14 June 1933.

According to article 14 of the Treaty the High Contracting Parties undertake not in any way to interfere with the reciprocal trade between the two countries by prohibitions or restrictions on importation, exportation or transit. Exceptions to this rule, in so far as they apply to all countries or to all countries in similar conditions, may be admitted for purposes, *inter alia*, of protection of animal or useful plants against diseases, insects or dangerous parasites. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 25 agosto 1933, anno 74<sup>o</sup>, n. 197, pp. 3794-3799).

\* \* \* By Ministerial Decree of 2 September 1933 the commune of Gaeta in the province of Rome has been declared infested with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 11 settembre 1933, anno 74<sup>o</sup>, n. 211, p. 4046).

\* \* \* By Ministerial Decree of 12 September 1933 the Commune of Parolise in the province of Avellino has been declared infested with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 23 settembre 1933, anno 74<sup>o</sup>, n. 222, p. 4288).

\* \* As from 1 September 1933 the Royal Observatory for Plant Diseases for the provinces of Genoa and La Spezia has been transferred from Chiavari to Genoa, via Marcello Durazzo, 1.

**Italian Somaliland.** — The Governatorial Decree No. 9877 of 28 August 1933, which establishes the regulations governing exportation for commercial purposes of bananas of the variety 'Giuba' [*Musa chinensis*], specifies *inter alia* that bunches for export must be submitted for phytosanitary inspection and must be free from the scale insect *Aspidiotus destructor* and other parasites. (*Bollettino Ufficiale della Somalia italiana*, Mogadiscio, 31 agosto 1933, anno XXIII, 3° supplemento al n. 7, pp. 269-276).

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# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### Angola: Locust Movements (1).

- 6 June 1933. — A very large swarm extending to the limits of sight passed for the second time over the village of Ganda, district of Benguela. The passage lasted nearly 4 hours.  
A swarm even larger than the preceding, flying east, passed over the civil post of Ebanga in the civil circumscription of Ganda. The passage lasted 8 hours.
- 8 June 1933. — Information received from the civil circumscription of Nova Lisboa states that locusts were present in the territory of the civil post of Luimbale.
- 9 June 1933. — A very large swarm invaded the region of Caconda. A very large red swarm, about 40 km in length, coming from the S. E. settled in the civil circumscription of Lepi, district of Benguela. It departed the following day flying S. E.  
A swarm coming from the south,  $5 \times 3$  km, settled in the same circumscription. It departed on the following day, flying N. E.
- 11 June 1933. — A large swarm was reported at Lufinda, civil circumscription of Chibia. The locusts were dead on the following day.  
A very large swarm of  $20 \times 7$  km, coming from Cuima and flying towards Bailundo, passed over the town of Nova Lisboa. It spent the night in the region of Gurimahála, 8 km from the town.  
The swarm caused incalculable damage to European and native crops, devastating in its passage wide areas of arable land and large plantations of fruit and forest trees.
- 13 June 1933. — Large swarms have been frequently reported in the different regions of the district of Bié; they have caused serious damage to the wheat and other crops.  
A very dense red swarm passed over Lepi from 1 to 5 p. m.; it came from the south and was flying N. It settled in the vicinity of the village and flew away in the same direction three days later.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Director of the Laboratory of Plant Pathology and Agricultural Entomology, Luanda, transmitted to the Institute by the Government General of the Colony.

A large swarm, the passage of which lasted 4 hours, passed over Bulo, post of Chiumbo, district of Benguela, at 3 p. m.

Further swarms of considerable size passed near Nova Lisboa flying in the direction of the circumscriptions of Lepi and Bailundo.

- 14 J u n e 1933. — Another swarm, the passage of which lasted 4 hours, passed over Bulo, post of Chiumbo at 3 p. m. and remained the whole night.

A very large swarm of  $20 \times 20$  km, coming from the post of Quipeio, passed at 4 p. m. over the post of Luimbale. It left the following day in the direction of Cassongue, causing considerable damage to the crops.

A large swarm coming from the S. settled at 3 p. m. in the vicinity of Vila do Bailundo.

- 15 J u n e 1933. — A swarm of 5 km, the passage of which lasted 4 hours, passed at midday over the region of Caputo Catolo, post of Chiumbo; this swarm is probably the same that settled in the vicinity of Bailundo.

A red swarm of 40 km passed at 11 a. m. over the village of Cuima. It came from the S. and was flying N. E.

- 16 J u n e 1933. — A large swarm coming from the E. and flying W. passed over Camabatela, district of Cuanza Norte, from 2 to 4 p. m. The extent of the damage done is not known.

- 17 J u n e 1933. — A large swarm coming from Ganda passed over the post of Balombo at 5. p. m.

- 18 J u n e 1933. — A swarm flying from E. to W. passed over the village of Duque de Bragança.

- 25 J u n e 1933. — A large swarm coming from the S. E. settled at Jamba in the vicinity of Humpata. It left the following day flying N. E.

- 26 J u n e 1933. — A swarm of red locust (*Nomadacris septemfasciata*) coming from the S. E. passed over the Escola Oficina Oscar, 12 km from Humpata. It departed the following day flying N. E.

The circumscription of Gaconda continued to be invaded in various places by swarms which caused considerable damage to the crops.

- 28 J u n e 1933. — A large swarm of red locust coming from the S. settled at Humpata. It left the following day flying N. E.

Various very large swarms of red locust invaded the circumscription of Seles, district of Cuanza Sul causing practically complete loss of the wheat and other main crops of Cassongue.

- 29 J u n e 1933. — Two large swarms passed at 3 p. m. between Vila do Balundo and the civil post of Mungo; they must have been settled before in the neighbourhood of Luahanda.

A swarm of red locust coming from the S. E. settled at 4 p. m. at Humpata and its vicinity. It departed the following day flying N. E.

- 30 J u n e 1933. — A swarm of 10 km coming from the S. E. passed over Palanca at 11 km from Humpata, flying N. E.

**Extent of locust invasion.** — As a result of my observations and the special information received I am able to state that in addition to the swarms reported above a number of others invaded various regions of the territory of Angola, particularly the districts of Sul Huila and Mossamedes, where the most serious damage was reported.

**Origin of the swarms.** — I am collecting information regarding the origin of the swarms and already have valuable data which will be dealt with in a separate report. I am able to state with absolute certainty that many, and even the greater number, of the swarms which invaded Angola had, unhappily, their origin within the territory. Others came from the neighbouring territories of Rhodesia and Damaralandia.

**Species.** — I can affirm that the greater part of the swarms that invaded the southern districts belonged to the red locust (*N. septemfasciata*). Also, but rarely, reports have been received of the tropical migratory locust (*Locusta migratoria migratorioides*). In the surroundings of Mossamedes several breeding places were reported of an ash green locust not yet been identified owing to lack of specimens, but which I hope shortly to be able to identify.

**Natural enemies.** — From information received from the circumscription of Chibia we know that on 12 June a large swarm which had settled the previous day at Lufinda was completely wiped out. During this night the cold was intense. It has been said, in some cases rightly, that the death of the insects was caused by a small larva which was found on the locusts. We are not able to say much about this parasite, or even state with certainty that it was a parasite, as I think was the case, because it was not possible for us to observe living specimens. The larvae which I examined had been dead several days and were completely dried up. If it would be of interest and utility I would try to obtain living specimens and send them to the Imperial Institute of Entomology in London.

The civil post of Otchinjau collected some specimens of insects known by the native name of 'Mandinde' which, according to information I have received, were numerous and devoured a great quantity of locusts. Some of these specimens will be sent to the Imperial Institute.

**Methods of control.** — The Administration of Agricultural Services and Commerce sent various instructions and circulars about the destruction of locusts in their various stages to the administrative authorities.

Special funds were appropriated for the combat of locusts and equipment was purchased consisting of sodium arsenite and other insecticides, various oils, metal barriers, flame throwers, sprayers, etc. Gangs and posts for the storage of equipment have also been formed for the anti-locust campaign and have begun their activities this year.

The methods of control have up to the present been as follows:—

For hoppers, ditches and barriers.

For adults, flame throwers, and collecting in bags. The method of buying locusts from the natives will also be tried.

**Eritrea: Desert and Tropical Migratory Locusts (*Schistocerca gregaria* and *Locusta migratoria migratorioides*).**

During August 1933 numerous swarms of locusts (*Schistocerca gregaria* and *Locusta migratoria migratorioides*) were observed in the eastern plain, the territories of the Seraè and of Acchelè Guzai.

It would seem that certain swarms of unrecorded colour were composed of *L. migratoria migratorioides*.

From 2 to 17 August red and brownish-red individuals (*Schist. gregaria* and *L. migratoria migratorioides*) coming from the Anglo-Egyptian Sudan penetrated into Eritrea and passed over Omagger, Gullui and Sabderat, flying towards the east. In the course of the month swarms were reported from all parts of the southern portion of the Colony.

On the 8th some yellow locusts (*Schist. gregaria*), sexually mature, coming from the Tigrai passed over Rendacomo, then returned in the direction from which they had come. On the 10th other yellow locusts (*Schist. gregaria*) settled near Maiò (Acchelè Guzai). A swarm of *L. migratoria migratorioides* laid along the torrent Obillet (Barentù) on 30 August.

Locusts caused slight damage to pasture in the territory of Maiò, also to some fields of dura (*Andropogon Sorghum*) and teff (*Eragrostis abyssinica*) in the Seraè and to small plots of dura in the vicinity of Barentù (1).

At the beginning of September 1933 numbers of winged swarms coming from across the Ethiopian frontier invaded the western plain (Tessenei) and damaged some crops of dura and some pasture between the Gasc and the Setit. Laying took place in three localities which have already been surveyed and inspected with a view to destroying hoppers as soon as they hatch. Damage in other regions of the Colony has been unimportant. The Hamasien has remained free. Swarms were composed mainly of *L. migratoria migratorioides* and also of *Schist. gregaria* (2).

Last year in the month of September numbers of swarms of locusts penetrated into the Colony from across the Abyssinian and Anglo-Egyptian borders, passed over the upland plateau and laid eggs in the eastern plain. During the month also numerous breeding places were observed particularly along the Red Sea coast.

This year such an invasion has not taken place: the upland plateau and the eastern plain have remained almost completely free from locusts.

(1) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, Asmara, transmitted by the Government of the Colony.

(2) Communication from the Government of Eritrea, transmitted to the Institute by the Ministry for the Colonies (Bureau of Studies and Propaganda).

One swarm consisting of *L. migratoria migratorioides* of unrecorded colour, flying towards Arresa, was reported on the 5th at Tucul, and another on the 6th near Adi Quala, flying east.

During the whole month swarms of *L. migratoria migratorioides* and *Schist. gregaria* circled more particularly in the territory between the Gasc and the Setit.

On the 10th and 11th eggs were laid in the neighbourhood of Barentù and on the 20th to the west of Tolè (Barentù) and at Curateb (Omagger) on the frontier.

On the 18th and 20th the presence of hoppers (*L. migratoria migratorioides*) was reported in the territory of Adergulià.

The damage to crops has been slight. In the Seraè, near Arresa, certain fields of dura (*A. Sorghum*) and of 'dagussa' (*Eleusine coracana*) were destroyed, and at Tessenei about 40 fields of 'bultuc' (*Pennisetum typhoides*) (1).

### United States of America: Recent Increase in Root Knot (2).

During the fall of 1931, Dr. H. S. Cunningham reported a serious infestation of root knot caused by *Heterodera radiculicola* in potato tubers on Long Island, New York. In all about 40 acres of potatoes were found to be so badly infested that the tubers were practically unsaleable.

No records exist of similar infestations so far north, and it has been assumed that this unusual abundance was in some way related to the high climatic temperatures of the past few years. Recently summarized weather records show that temperature trends in the central and eastern portions of the United States have been prevailing high for a long time. Fall and winter temperatures have in general been unusually high in this region for at least ten years.

Further support has been given to the theory that a longer yearly warm period was making possible the northern extension of the root knot nema by Dr. R. F. Poole's observation that it was becoming more abundant in the higher, cooler regions of North Carolina. In substance Poole's report is as follows: Only recently was there any evidence that the nematode, *Heterodera radiculicola*, may become a problem in the Piedmont and mountain areas. It has long been known to cause severe injury on the sandy soils of the coastal region, but even here it had not infested all areas. During the 1932 season heavy infestation of tobacco was observed in Stokes County, in the foothills of the mountains. A survey showed infestation in more than 85 per cent of the tobacco fields. It was much worse on some areas than on others. Tobacco was killed in many areas before all of the crop could be harvested. Heavily infested plants devel-

(1) Communication from the official correspondent of the Institute, Dr. Rolando GUMORTI, Chief of the Agricultural Bureau of Eritrea, Asmara, transmitted to the Institute by the Government of the Colony.

(2) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

oped hollow stalks, dead tips, and dead margins on the leaves. Serious damage results, since the leaves of infested stalks cure unevenly and are poor in quality. Heavy losses of other crops were due to heavily infested root systems.

The disease has been prominent on corn. It has been seen on rye, crimson clover, vetch, and Austrian winter peas. These plants were heavily infested although they are winter cover crops. Vetch was killed by the disease in some heavily infested areas. The character of infestation on vetch indicates that the nematodes do not cease to be active during the winter in the coastal region.

### India: Diseases in the Bombay Presidency (1).

The following parasites have been reported for the first time in the Bombay Presidency :—

*Septoria cannabis* (Lasch.) Sacc. on *Cannabis sativa* L.

*Coleosporium oldenlandiae* (Mass.) Butl. on *Oldenlandia aspera*.

*Cercospora commelinae* Kal. & Cke. on *Commelina* sp. and *Septoria atchinsonii* Syd. on *Jasminum malabaricum* L. are believed to be recorded for the first time in India.

*Uromyces fabae* (Pers.) deBary and *Erysiphe polygoni* DC. on *Lathyrus odoratus* L. are recorded for the first time in India. Both these parasites are doing great damage to sweet pea crops around Poona.

### Southern Rhodesia: Locust Invasion, 1933 (2).

Monthly Report No. 9, August, 1933.

There is little change in the general position.

#### 1. Tropical Migratory Locust (*Locusta migratoria migratorioides*).

No records of this species in the colony have been obtained during the month.

#### 2. Red Locust (*Nomadacris septemfasciata*).

The swarms of this species appear to be exhibiting greater activity and to be more conspicuous with the advent of warmer weather. They seem also to be becoming more hungry and loss of at least one extensive irrigated crop of wheat is reported.

Entomologists may note that the flying swarms of this species now exhibit the full red coloration associated with migratory swarms, but that the purplish pink suffusion at the base of the hind wing is still very irregularly developed. Certain large swarms early in the month showed practically no development of this suffusion.

(1) Communication from Mr. M. K. PATEL, Ag. Plant Pathologist to Government, Bombay Presidency, Poona.

(2) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.



Red Locust adults kept continuously in cages have not developed the swarm coloration, but remain brown with the medium light stripe down the pronotum and elytra conspicuous. These specimens show strong development of the purplish pink suffusion at the base of the hind wings and, probably owing to lack of exposure to the sun, this suffusion is notably dark. It appears clear that the development of this suffusion is not correlated with the development of red pigment on the chitinous parts of the integument.

There were no signs of egg development to the end of the month.

Reports from neighbouring states reveal a very grave position in reference to the Red Locust and all indications point to a further heavy invasion of the colony when the large migratory movements commence. The Union of South Africa has now been invaded by the Red Locust. Swarms have penetrated Zululand and Natal apparently from Mozambique. The Transvaal has been invaded by swarms thought to have come from Bechuanaland.

### Turkey: Plant Enemies observed in Anatolia during 1933 (1).

*Dociostaurus maroccanus*. — The Moroccan locust made its appearance this year as in previous years in the region of Gaziayintap, Mardin and Urfa. But many swarms perished as a result of the excessive drought which held during their period of greatest activity. Swarms coming from Syria which usually penetrate into our country have not been observed this year. Only the desert steppe between Mardin and Urfa was infested with eggs, which may be expected to hatch in 1934. For the anti-locust work this year zinc barriers and poisoned bait were used.

*Locusta migratoria ph. danica*. — This locust caused damage in the region of Divarbekir. It was controlled by means of poisoned bait.

*Calliptamus italicus*. — The Italian locust invaded Thrace and the region of Brussa and Samsun. As it was however in the form of solitary individuals, it was not found necessary to resort to control measures.

*Eriophyes avellanae*. — The nut bud mite causes each year considerable losses of hazels in the region of the Black Sea. This year the infested buds were collected and burnt. It is the first time that any control measure has proved successful.

*Balaninus nucum*. — The damages caused to hazels by this beetle were insignificant.

*Carpocapsa pomonella*. — The codling moth causes considerable damage to apple trees in Anatolia. This year the Ministry of Agriculture made a special organisation responsible for the control measures to be carried out in the region of Kastamonu, Amasya and Nigde, from which the fruit is exported abroad. Lead arsenate was used for two sprayings of the trees. In this way 80 % of the crop was saved.

(1) Communication from the official correspondent of the Institute, Mr. SUREYA, Councillor of State, Angora.

*Hyponomeuta malinellus*. — The ermine moth is very widely distributed in Anatolia. The damage caused to apple and apricot trees is considerable. It has been controlled by means of 'Uraniagrun'.

*Ephestia cautella*. — Damage has been reported to fig trees in the region of Aydin. As it was observed that the females lay their eggs on figs spread out on planks to dry and that the caterpillars are transformed to chrysalises when the figs are stored, the figs have been protected while drying by means of toxic gas and the granaries and other places of storage have been thoroughly disinfected.

*Dacus oleae*. — The olive fly is present in all the olive plantations. This year the Berlese method of control has been tried in the region of the Sea of Marmara.

*Chrysomphalus dictyospermi*. — This scale insect causes damage in orange orchards in the region of Adana. Three generations per annum have been observed. Control is attempted with polysulphides.

*Diaspis pentagona*. — It was only in 1913 that the mulberry scale was observed for the first time attacking mulberry trees in the region of Istanbul. It has been attempted to eradicate this breeding centre by pulling up the mulberries. But as the insect attacks also walnuts, peaches and locust trees it was not found possible to prevent its spread. A serious invasion was observed in Anatolia in 1933. During the year numbers of mulberry trees have been killed and peaches and other fruit trees have been seriously damaged.

Many persons try to control this pest in their gardens by using emulsions of soap and petrol and solution of polysulphides.

*Sus scrofa*. — Wild boars have for a long time caused considerable damage each year to the potato and maize crops in Anatolia, particularly in the Black Sea region. The Ministry of Agriculture in 1932 made a special organisation responsible for the campaign against them which has been carried out by hunting and in certain districts by means of poisoned bait.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Germany.** — A Ministerial Circular of 22 June 1933 prescribes the adoption of a new method for testing whether, after disinfection with ethylene oxide, the last traces of toxic gas have disappeared.

The method, invented by Dr. Deckert, is as follows:— The air to be tested is passed through a 22 % solution of common salt to which has been added a little phenolphthalein. In this solution, heated to boiling point, the ethylene oxide reacts with the sodium chloride and is transformed into ethylene-chlorhydrine with the formation of sodium hydrate, which changes the colour of the phenolphthalein to pink or red. (*Amliche Pflanzenschutzbestimmungen*, Berlin 1933, Bd. V, Nr. 2, S. 64-65).

\* \* By two Ministerial Circulars of 3 and 4 July 1933, persons responsible for testing whether after disinfection with ethylene oxide or hydrocyanic acid gas the last traces of toxic gas have disappeared, must be capable of distinguishing accurately the various shades of pink, red and blue. (*Ämliche Pflanzenschutzbestimmungen*, Berlin 1933, Bd. V, Nr. 2, S. 63 u. 65).

**Germany (Anhalt).** — A number of musk rats [*Fiber zibethicus*] having been killed in the course of 1933, a communication from the Ministry of State, dated 19 August 1933, draws attention to the Police Ordinance of 18 October 1918 which requires that the police shall be notified whenever a musk rat has been killed. Musk rats must be combatted by every possible method. The prize offered for each specimen killed has been raised to 3 RM. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 10, S. 86).

**Germany (Hanover).** — By Police Ordinance, dated 22 June 1933, relating to the control of rats and field voles in the circumscription of Hadeln, owners and holders of any cultivated land and all persons responsible for the upkeep of roads, ditches, railway embankments, etc. are required to comply with the regulations prescribed on the subject by the competent authorities.

The principal officer of the circumscription will fix the limits within which the control measures are to be executed, the time of the campaign and the methods to be used. He will also indicate whether the control measures are to be carried out by the owners, holders or managers of the property or by persons engaged by the firms making or supplying the materials used in the control campaign. (*Ämliche Pflanzenschutzbestimmungen*, Berlin 1933, Bd. V, Nr. 2, S. 66-67).

**Germany (Prussia).** — With a view to the control of potato wart disease [*Synchytrium endobioticum*] in the province of Saxony, it has been forbidden since 10 April 1932 to plant in the circumscription of Jerichow II in gardens and fields exceeding  $\frac{1}{4}$  hectare in extent other varieties of potato than those recognised to be resistant to the disease.

A similar regulation, dated 13 March 1933, which entered into force 1 July 1933, applies to various communes in the circumscription of Erfurt. In these communes it is also prescribed that resistant varieties shall be increasingly used, so that by the end of two years the non-resistant varieties may be completely replaced by resistant varieties.

In the circumscription of Osterburg the cultivation of any non-resistant variety is absolutely prohibited as from 1934. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 10, S. 86).

**Germany (Westphalia).** — By Ordinance of 7 March 1933, which modifies that of 21 October 1932 relating to the control of the commerce in potato varieties resistant to wart disease [*Synchytrium endobioticum*] intended for use as seed, it is forbidden in Westphalia to market or hawk such potatoes.

On the arrival of a consignment of potatoes resistant to wart disease the directors of the authorised market premises shall have a sample taken by a sworn official or by an expert in accordance with the regulations on the subject fixed by the German Agricultural Council. This sample is to be sealed and sent to the Central Plant Protection Service. (*Amtliche Pflanzenschutzbestimmungen*, Berlin 1933, Bd. V, Nr. 3, S. 86).

**England.** — The Order of 7 June 1933 which is entitled 'The Importation of Plants Order of 1933' and which came into operation on 15 July 1933, requires all imported consignments of all classes of living plants and parts thereof (except seed) for planting, and all potatoes, to have been officially examined by the authorities of the country in which they were grown and certified as having been found to be healthy and free from any evidence of the presence of any insect, fungus or pest destructive to agricultural or horticultural crops. An additional certificate is required, as hitherto, in respect of plants grown in France, to the effect that the Colorado Beetle [*Leptinotarsa decemlineata*] has not been known to exist within 200 kilometres of the place where the plants, etc. were grown.

Consignments which arrive unaccompanied by the prescribed certificates of health and which were formerly allowed to proceed to their destination, will now be detained by the Officers of H. M. Customs and Excise and will be required to be destroyed or re-exported at the expense of the importer unless a licence is issued authorising the plants, etc. to be disposed of otherwise. If this licence is granted it may require the consignment to be examined by one of the Ministry's Inspectors when, if the plants, etc. are found to be healthy, a certificate authorising their release will be issued after payment by the importer of the fee prescribed for this service.

The existing prohibition of the importation of potatoes grown in the United States of America, the Dominion of Canada, or in France, remains in force; the transshipment in English or Welsh ports of such potatoes is also prohibited except under licence from the Ministry. The health certificate for potatoes from other countries which was specified under the previous regulations required an additional statement to the effect that no case of Wart Disease [*Synchytrium endobioticum*] has occurred within five hundred yards of the place where the potatoes were grown; in the new Order this distance has been extended to two kilometres (approximately 1  $\frac{1}{4}$  miles).

An additional provision of the new Order relates to cider apples imported between 15th March and the 14th October in each year. Between these dates cider apples grown in France must be accompanied by an official certificate in similar terms to that required during the same period in respect of raw vegetables grown in France, i. e., to the effect that the Colorado Beetle has not been known to exist within a radius of at least two hundred kilometres of the place where the produce was grown. Raw vegetables and cider apples grown in any other European country and imported between the above mentioned dates must be accompanied by an official certificate of origin.

The new Order continues the restrictions which were first imposed in 1930 on the importation of raw apples grown in the United States of America, and between the 7th July and the 15th November in every year these may be imported only when accompanied by an official certificate to the effect that they are of one or other of the two highest grades recognised by the Federal Department of Agriculture.

Any imported plants, potatoes, raw apples or raw vegetables found to be unhealthy will be required to be treated, destroyed or re-exported at the expense of the importer. (Ministry of Agriculture and Fisheries. Importation of Plants, Potatoes, etc. London, June, 1933, 1 p. [Mimeographed]).

\* \* By the Colorado Beetle Order of 1933, dated August 23, 1933 the occupier of any land, in or on which Colorado Beetle (*Leptinotarsa decemlineata*) exists or is suspected to exist, shall, with all practicable speed, give notice in writing to the Ministry of Agriculture and Fisheries of the existence or suspected existence thereof, and such notice shall, when practicable, be accompanied by a specimen thereof.

No person shall, except with the authority of, and in accordance with the instructions of, an Inspector of the Ministry :—

(1) spray or otherwise treat any crop infected by or suspected of being infected with Colorado Beetle ;

(2) have in his possession any live Colorado Beetle which has been taken or removed from any crop ; or

(3) keep any live Colorado Beetle in captivity.

An Inspector may enter upon and examine any crop upon any land in, on or in the vicinity of which he has reason to believe that Colorado Beetle exists or has existed.

An Inspector may, by notice in writing, declare any land in, on or in the vicinity of which Colorado Beetle exists or is reasonably suspected by him to exist, to be an Infected Place for the purposes of this Order and such land shall continue to be an Infected Place until the notice is withdrawn by a notice in writing signed by an Inspector.

No person other than the occupier of land which is, or forms part of, an Infected Place, or his servants or agents, shall enter the Infected Place except with the authority of an Inspector.

So long as a declaration of any land as an Infected Place remains in force, no crop shall be planted upon any land to which the declaration relates without the approval of an Inspector.

No person shall, without the authority of an Inspector, remove or cause or permit to be removed from any Infected Place any potato plants, haulms or tubers, or any tomato plants or tomatoes.

An Inspector and any person authorised in writing by him for the purpose may enter any Infected Place and treat, remove or destroy, or cause to be treated, removed or destroyed, any crop thereon, and may take such other steps as the Inspector may think expedient for preventing the spread of Colorado Beetle ; and the owner of the crop and the occupier of land on which the crop is growing

or stored, or of any land within an Infected Place, shall render all reasonable assistance and facilities for carrying out these provisions.

Where any crop is removed or destroyed under the provisions of this Order, compensation may be paid for such removal or destruction in accordance with the provisions of the Destructive Insects and Pests Acts, 1877 to 1927. (*Statutory Rules and Orders, 1933, No. 830. Destructive Insect and Pest, England. The Colorado Beetle Order of 1933. Dated August 23, 1933. (D.I.P. 569). London, 1933, 5 pp.*).

**Danzig (Free City of).** — By Ordinance of 15 May 1933 new measures have been adopted with regard to the control of potato wart disease (*Synchytrium endobioticum*) and the Colorado beetle (*Doryphora* [*Leptinotarsa*] *decemlineata*).

Potato crops and stocks will be submitted to control by the police in collaboration with the Plant Protection Service.

Any new outbreak of wart disease which is ascertained or suspected must be declared to the police, to the Central Bureau of the Plant Protection Service or to the Chief Officer of the Commune.

On land known to be infected the residues of the potato crop must be collected and carefully destroyed by burning or burying.

It is forbidden to replant potatoes grown on such land. It is forbidden to allow potatoes grown on such land to leave the farm or to use them otherwise than cooked. This regulation applies also to potato waste which is to fed to stock. Farms known to be infected with wart disease may not sell or otherwise dispose of farmyard or liquid manure.

It is forbidden to plant potatoes on infected land within five years of the discovery of infection. It is forbidden to plant on neighbouring land where there is risk of infection varieties other than those declared by the Plant Protection Service to be resistant to wart disease.

It is forbidden to plant in gardens of the City of Danzig varieties other than « Paulsens Juli » and « Modrows Preussen ».

The measures to be taken for the control of the Colorado beetle will be fixed by the police in accordance with directions issued by the Senate. (*Amthliche Pflanzenschutzbestimmungen, Berlin 1933, Bd. V, Nr. 2, S. 67-69*).

**France.** — By Ministerial Decree of 19 September 1933 the list of countries infected with potato wart disease (*Synchytrium endobioticum*) enumerated in Article 1 of the Ministerial Decree of 6 June 1924, modified by the Ministerial Decrees of 20 December 1924, 2 November 1925, 15 September 1927 and 16 May 1933 [see this *Bulletin*, 1933, No. 9, p. 206] is completed by: the territory of the Free City of Danzig. (*Journal Officiel de la République Française, Paris, 21 septembre 1933, LXV<sup>ème</sup> année, n° 221, p. 9900*).

**Italy.** — The Ministerial Circular No. 392 of 5 September 1933, addressed to the Regional Phytopathological Observatories, fixes the regulations to be observed for the exportation of chestnuts to the United States of America.

(*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 1<sup>o</sup> ottobre 1933, anno V, n. 19, pp. 3655-3659).

\* \* The Decree-Law Royal No. 1372 of 28 September 1933 authorises the Ministry of Agriculture and Forests to contribute to the costs of control of the citrus scale insects.

Three million liras have been earmarked for this purpose in the extraordinary part of the Ministry's budget for the financial year of 1933-34. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 2 novembre 1933, anno 74<sup>o</sup>, n. 254, p. 5015).

\* \* By three Ministerial Decrees of 7 October 1933 the communes of Montemiletto, San Martino Valle Caudina (province of Avellino), Folignano, Grottamare (province of Ascoli Piceno), and Caselle in Pittari (province of Salerno) have been declared infected with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 20 ottobre 1933, anno 74<sup>o</sup>, n. 245, p. 4846).

**Morocco (French Zone).** — By two Decrees of the Director of Waters and Forests dated 22 and 27 July 1933, the destruction of rabbits has been authorised in certain zones of the region of the Rharb and in that of Meknès. (Empire Chérifien, Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 4 août 1933, XXII<sup>ème</sup> année, n<sup>o</sup> 3084, p. 740-741).

\* \* By Viziriel Decree of 11 August 1933 (18 rebia II 1352), owners and holders of land, settlers, share tenants, tenants, usufructuaries, managers, native cooperative bodies, administrators of land belonging to the State, municipalities, public establishments and Habou property, and occupiers or persons exploiting in any capacity property on which are found nests of the common house sparrow (*Passer domesticus*) and of the Spanish sparrow (*P. hispaniolensis*) are required, between 1 March and 30 June of each year, to destroy any nests, eggs and young of the birds mentioned.

The persons specified are required during the whole year to destroy any adult sparrows and more particularly any flocks residing on their land.

In woods and forests however it is obligatory to carry out these measures only to a depth of thirty metres.

The local authorities may in agreement with the regional inspector of plant protection and phytosanitary inspection prescribe any measures necessary for the application of the present Decree and, more particularly, the destruction of wild plants, other than trees, capable of favouring the nesting of sparrows.

The destruction of such plants may be ordered when the plants in question are situated within forest boundaries.

When it applies to woody plants the opinion of the Director General of Public Works and of the Director of Waters and Forests must be previously obtained.

The Viziriel Decree of 24 March 1923 (6 chaabane 1341) containing regulations relating to the destruction of sparrows' nests is annulled. (Empire Chérifien, Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 1<sup>er</sup> septembre 1933, XXII<sup>ème</sup> année, n<sup>o</sup> 1088, p. 863).

\* \* The Dahir of 11 August 1933 (18 rebia II 1352) annuls the Dahir of 22 May 1925 (28 chaoual 1343) making obligatory the destruction of caterpillars. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 6 octobre 1933, XXII<sup>ème</sup> année, n° 1093, p. 981).

\* \* The Viziriel Decree of 11 August 1933 (18 rebia II 1352) prescribes the measures to be taken for the destruction of 'chenilles des friches' (larvae of Lepidoptera which live on the wild herbaceous vegetation and multiply to form large swarms).

Owners or holders of land, settlers, share tenants, tenants, usufructuaries, agents, native cooperative bodies, administrators of property belonging to the State, municipalities, public establishments and Habou property, and occupiers or persons exploiting in any capacity land on which such caterpillars occur, are required, between 1 November and 1 April of each year, to destroy the caterpillars and the webs that are woven by certain of them as and when they appear. In woods and forests however it is obligatory to carry out such destructive measures only on a strip thirty metres in depth. (*Ibid.*, p. 981-982).

\* \* A Decree of the Director General of Agriculture, Commerce and Land Settlement, dated 30 August 1933, establishes *inter alia* that it is illegal to import, transport for purposes of marketing, to hold for sale, to sell or dispose of, under the designation of seed wheat, any wheat containing at the time of consignment more than 1 % of total impurities or more than 2 % of broken grain.

Are considered as impurities not only inert matter and seeds other than wheat, but also wheat grain affected with bunt or smut. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 8 septembre 1933, XXII<sup>ème</sup> année, n° 1099, p. 888-889).

\* \* By Decree of the Director of Waters and Forests, dated 7 September 1933, owners or holders of lands situated within the territory of the Bureaux of Native Affairs of Kelâa-des-Slès and Tafrant, region of Fez, are authorised to destroy wild boars on their lands, at any time and by any means, except fire. Boars killed in these conditions may not however be transported, hawked or exposed for sale. The present Decree will remain effective until the last day of the close season of 1934. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 15 septembre 1933, XXII<sup>ème</sup> année, n° 1090, p. 910).

**Peru.** — By Ministerial 'Resolución' No. 224 of 16 June 1933 a Commission has been appointed to study and ascertain the most suitable localities for the installation of factories for the extraction of rotenon, to establish such factories and decide on the methods to be used for the extraction. (*La Vida Agrícola*, Lima, 1933, vol. X, no. 117, pág. 1347).

**Saar Basin.** — The Police Ordinance of 25 August 1933 contains amendments to the regulations [see this *Bulletin*, 1933, No. 9, p. 208] concerning the San José scale (*Aspidiotus perniciosus*).



Spain has been added to the list of countries from which it is forbidden to import living plants or parts of living plants. It is also forbidden to import fresh fruits or fruit waste from any of the countries included in the said list.

Such products coming from countries other than those indicated may be imported only on condition that the consignments are accompanied by an official certificate of the country of origin stating the place of origin.

Consignments not complying with these regulations will be put at the disposal of the consigners. In the case of the consigner or his representative not disposing of the products within eight days they may be destroyed by burning or utilised in any way which entails no risk of spreading the San José scale.

Consignments which in the opinion of the experts of the official Plant Protection Service are infested or are suspected of infestation by the San José scale will be destroyed on the spot by burning without compensation being payable to the consigner or his representative. An expert who is present will prepare an account which will be communicated to the Government of the country of origin. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 10, S. 86-87).

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[See also this *Bulletin*, 1933, No. 1, p. 19.

*Loranthus* spp., *Cuscuta* sp., lichens and moss, *Cephaleuros parasiticus*, *Hemileia vastatrix*, *Pestalotzia theae*, *Glomerella cingulata*, *Laestadia camelliae*, *Cercospora coffeicola*, *C. theae*, *Cercospora theae*, *Exobasidium vexans*, *Gloeosporium coffeanum*, *Corticium koleroga*, 'maladie du filament', *C. theae*, *C. invisum*, *C. salmonicolor*, *Nectria cinnabarina*, *N. bainii*, *Stilbella theae*, *Macrophoma theicola*, *Massaria theicola*,

*Helicobasidium compactum*, *Septobasidium bogoriense*, *Rosellinia arcuata*, *R. bunodes*, *Ustulina maxima*, *Sphaerostilbe repens*, *Thyridaria tarda*, *Armillaria mellea*, *Poria hypolateritia*, *P. hypobrunnea*, *Ganoderma pseudoferreum*, *Fomes lamaeensis*, *F. lignosus*, *F. lucidus*, *F. applanatus*.

In an appendix a description is given of the 'ver tournant' or 'borer tournant' (larva of the Longicorn ?).

These three chapters follow :— Généralités. — Préparation et mode d'emploi des insecticides et fongicides. — Table de détermination].

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# INTERNATIONAL BULLETIN OF PLANT PROTECTION

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## DISCOVERIES AND CURRENT EVENTS \*

French North Africa: The Desert Locust (*Schistocerca gregaria*) (1).

### ALGERIA.

No information has been received from the regional Station of Algiers with regard to the months of August and September 1933.

8 October 1933. — A swarm coming from the S. passed Ouallem (Adrar) in the evening, flying N.

22 October 1933. — A small red swarm settled at 7 a. m. at Reggan (Adrar).

A very large swarm coming from the S. passed at 10 a. m. over Reggan (Adrar), flying N.

25 October 1933. — A small pink swarm coming from the S. E. settled at 8 a. m. at Timimoun.

26 October 1933. — A dense red swarm settled on the Touat de Reggan (Adrar).

A pink swarm coming from the S. settled on the palm plantation of Beni Abbès.

27 October 1933. — A large red swarm settled in the morning at Tabelbala. Flew N. with a violent wind.

29 October 1933. — Two red swarms coming from the S. settled at 4 p. m. at Nebka, Ouallem and El Bour (6 to 30 kilometres S. W. of El Goléa).

A red swarm settled along the El Goléa-In Salah track between 45 and 70 kilometres from El Goléa.

### MOROCCO.

19 October 1933. — A pink swarm coming from the S. passed Igherm, flying N. It crossed the plain of the Souss between the 25th and 30th and settled at Ida ou Tanan on 1 November.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

French West Africa: The Desert Locust (*Schistocerca gregaria*) in Mauritania (1).

A very large red swarm coming from the S. W. passed on 23 October over Atar flying N. E.

French West Africa: Parasites of Plants Cultivated in the Ivory Coast (2).

I. — TREE AND INDUSTRIAL CROPS.

Coffee.

*Fomes lignosus* Klotzsch  
*Fomes lamaensis* Murrill  
*Heterodera radiculicola* Müll.  
*Cercospora coffeicola* Berk. et Cooke  
*Leptosphaeria coffeicola* Del.  
*Sphaerella coffeicola* Cooke  
*Gloeosporium coffeanum* Del.  
*Capnodium coffeae* Pat.?  
*Cephaleuros virescens* Kunze.  
*Marasmius scandens*  
*Trachysphaera fructigena* Tabor et Bunting  
*Loranthus lanceolatus* P. Beauv.

*Marasmius scandens*  
*Marasmius equicrinis* Müll.  
*Loranthus lanceolatus* P. Beauv.

Oil Palm.

Perisporiaceae, species unidentified.

Kola.

*Cephaleuros virescens* Kunze  
*Nectria* sp.  
*Lasiodiplodia theobromae* (Pat.) Griff. et Maubl.  
*Marasmius equicrinis* Müll.  
*Loranthus lanceolatus* P. Beauv.

Cotton.

Cacao.  
*Armillariella mellea* (Vahl) Pat.  
*Lasiodiplodia theobromae* (Pat.) Griff. et Maubl.  
*Corticium* (salmonicolor?)  
 Physiological disease.  
*Colletotrichum brachytrichum* Del.?  
*Phyllostictia theobromae* d'Alm. et S. da Cam.?  
*Cephaleuros virescens* Kunze.  
*Phytophthora palmivora* Butl.  
*Trachysphaera fructigena* Tabor et Bunting  
*Nectria* sp.  
*Colletotrichum* sp.

*Bacterium* sp.  
*Phoma roumii* Fron  
*Lasiodiplodia theobromae* (Pat.) Griff. et Maubl.  
*Pseudomonas* (Bacterium) malvacearum?  
*Sclerotium* sp.  
*Uredo* (*Kühneola*) *gossypii* Lag.  
*Mycosphaerella* (*Ramularia*) *areola* Ehrlich et Wolf.  
 Virus disease.  
*Glomerella gossypii* Edgerton

Castor Oil.

*Sclerotium* sp.  
*Oidium* sp.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

(2) Communication from the official correspondent of the Institute, M. A. MALLAMATRE, Ingénieur d'Agronomie Coloniale, Director of the Phytopathological Laboratory, Bingerville, Ivory Coast.

## II. — FRUIT CROPS.

### Banana.

*Gloeosporium musarum* Cooke  
*Pseudomonas musae*?  
*Marasmius stenophyllus* Mont. (*M.*  
*semiustus* Massee).

*Tylenchus (musicola?)*

### Pineapple.

Imperfect fungus, unidentified.

## III. — FOOD CROPS.

### Plantain.

Same diseases as the banana; but  
hardier.

### Yam.

*Cercospora* sp.

### Cassava.

*Cercospora cassavae* Ell. et Ev.  
*Colletotrichum manihotis* Hennings  
Virus disease.

### Maize.

*Ustilago maydis* (DC.) Corda  
*Diplodia zeae* (Schw.) Lév.  
*Helminthosporium turcicum* Pass.

### Taro.

*Cercospora* sp.  
*Phyllosticta colocasiae*  
*Pythium aphanidermatum* (Eds.)  
Fitz.

### Groundnut.

*Cercospora personata* Ellis  
Virus disease.  
*Sclerotium (Corticium) rolfsii* Sacc.  
*Colletotrichum* sp.

## IV. — LEGUMINOUS COVER CROPS.

*Tephrosia candida*.  
*Lasiodiplodia theobromae* (Pat.)  
Griff. et Maubl.  
*Loranthus lanceolatus* P. Beauv.  
*Tephrosia ehrenbergiana*.  
*Meliola bicornis* Wint. var. *tr-*  
*phrosiae* Beeli

*Mucuna utilis*.  
*Cercospora mucunae* Syd.  
*Sclerotium (Corticium) rolfsii* Sacc.  
*Centrosema plumieri*.  
*Bacterium* sp.  
*Cassia hirsuta*.  
*Sclerotium* sp.

## V. — VEGETABLES.

### Tomato.

*Cladosporium fulvum* Cooke  
*Bacterium briosii* Pavar.  
*Tylenchus* sp.

### French bean.

*Isariopsis griseola* Sacc.  
*Sclerotium* sp.

Cabbage.	Egg Plant.
<i>Alternaria brassicae</i> (Berk.) Sacc.	<i>Tylenchus</i> sp.
<i>Sclerotium</i> sp.	
<i>Bacterium</i> sp.	Cardoon.
	<i>Sclerotium</i> sp.
Celery.	
<i>Septoria apii</i> (Br. et Cav.) Rostr.	Various Salad Plants.
<i>Cercospora apii</i> Fr.	<i>Heterodera radiculicola</i> Müll.
<i>Bacterium</i> sp.	
<i>Sclerotium</i> ( <i>Corticium</i> ) <i>rolfsii</i> Sacc.	Turnips.
Asparagus.	<i>Sclerotium</i> sp.
<i>Fusarium</i> sp.	<i>Bacterium</i> sp.

#### Eritrea: The Tropical Migratory Locust (*Locusta migratoria migratorioides*) (1).

During October 1933 no locust swarms were reported within the territory of the Colony.

A few hopper bands only of *Locusta migratoria migratorioides* made their appearance in certain localities of the Seraé and the western plain, and more precisely about 7 October in the vicinity of Dega, Ducambia, Barentù, on the 11th in the Mai-Tzade and the Medri-Uod-Seberà (Seraè) ; on the 21st at Meraz in the Cohain ; on the 27th at Ghirghif (Gullui).

Damage to crops has been slight. Rapidly organised native gangs destroyed a great number of hoppers.

#### United States of America: Further Distribution of Tobacco Downy Mildew in 1933 (2).

During this season downy mildew of tobacco (*Peronospora hyoscyami*) spread west of the Appalachian Mountains into the tobacco producing regions of Tennessee. The history of this disease during the past three years shows it occupying a somewhat wider range each year. It will be remembered that in 1921 this disease, long known in Australia, appeared in a few plant beds in west Florida and south Georgia. While it caused much alarm little actual damage was done and the disease was not again seen until ten years later.

In 1931 (See *International Bull. Plant Protection* (5: 183-184) October, 1931) the disease reappeared in areas infected ten years earlier and spread through

(1) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, Asmara, transmitted by the Government of the Colony.

(2) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

much of the tobacco growing region of the Carolinas, reaching southern Virginia and Maryland. Actual commercial damage was slight as few plants were killed.

In 1932, the disease was both more widespread and more destructive than in 1931. Losses in Georgia and the Carolinas were so severe as to materially reduce the crops. The disease was found throughout a large portion of the eastern Virginia and Maryland tobacco areas and was found in two beds in Lancaster County, Pennsylvania. (See *International Bull. Plant Protection* (6: 180-181) November, 1932).

This year (1933) while the disease was very abundant in the Carolinas and Georgia, the actual commercial loss appears to have been minimized in this region by the fact that growers generally, in anticipation of a recurrence of this disease, had a considerable excess of plant beds.

The range of the disease was, however, greater than ever before. It was again found as far north as Lancaster County, Pennsylvania, in somewhat greater abundance than previously. And was widely distributed in southwestern Virginia and eastern Tennessee. In Tennessee the disease was found scattered over twenty-two counties.

#### Latvia: The Destruction of Barberry and Buckthorn (1).

With a view to the control of cereal rusts (*Puccinia graminis* Pers. and *P. coronifera* Kleb.) which in our country cause losses estimated at 20,000,000 Ls. annually, the Parliament of Latvia passed on 11 March 1930 a law for the destruction of barberry (*Berberis vulgaris* L.) and buckthorn (*Rhamnus cathartica* L.). This law was published in the official gazette ('Valdības Vestnesis') No. 65 of 20 March 1930 and was completed by instructions published also in 1930 (No. 120).

In accordance with this law *Berberis vulgaris* L., *B. vulgaris* L. var. *atropurpurea* Hort. and *Rhamnus cathartica* L. should have been completely eradicated throughout the country by 20 March 1933. They should have been already destroyed before 20 March 1931 at least in the arable land or within a radius of 200 m around arable land, in gardens, promenades, nursery gardens, parks, cemeteries, meadows and pastures.

The destruction of the plants required by the law must be carried out by the owners of the land or, in the case of State-owned land, by the usufructuary. If the persons responsible do not comply with the requirements within the time fixed by the law the destruction may be carried out at their expense by the State. Culture of the plants in question for scientific purposes is allowed only with authorisation of the Minister of Agriculture. The Minister of Agriculture may also as an exceptional measure concede a prolongation of the term fixed and will supervise the carrying into effect of the law. In State-owned forests the plants are to be destroyed by the Department of Forests.

(1) Communication from the official correspondent of the Institute, Mr. L. GAILLIS, cand. rer. nat., Director of the Entomological Department of the University, Riga.

On 20 March 1933 the period of three years fixed by the law for the destruction of these noxious plants was terminated. The Minister of Agriculture, taking into consideration that even at the time of the passing of the law it appeared impossible that in three years the plants in question should be completely eradicated throughout the whole country, consented in 1932 to postpone the date for complete eradication to 20 March 1935. With a view to encouraging the work of destruction on private and communal property the Council for Plant Protection of the Ministry of Agriculture decided to require the officials of the Department of Forests and of the Ministry of Agriculture to remind all individuals and institutions of the necessity of giving effect to the law and, in cases of opposition on their part, to notify the Ministry of the names of the persons concerned in order that they may be held responsible and the work carried out at their expense.

Up to the present the most extensive work has been carried out by the Department of Forests on the 1,768,857 hectares of land under its administration. The 82 forest centres have reached the following figures in the course of the three years ending 20 March 1933:—

Species	Number of forest centres	Number of plants located	Number of plants destroyed	Number of plants remaining after 20 March 1933
<i>Berberis vulgaris</i> L. . . . .	50	70 863	50 905	17 958
<i>Rhamnus cathartica</i> L. . . . .	59	337 664	250 817	86 847
Total . . .	109	408 527	303 722	104 805

The cost of the work carried out by the Department of Forests amounts to 24,621 Ls., that is to an average of 8 'Santim' per bush. In general common salt has been used for the destruction of the plants, at the rate of 3-5 kg per bush. In places where the salt might have been devoured by livestock or game the ground was covered or sprinkled with paraffin. The use of salt has been avoided in certain places where it might constitute a danger to cultivated plants. Salt has been found ineffective on very moist soils on which it disappeared before it could be absorbed by the roots. Certain forest centres have combined the application of salt with grubbing the plants and applying salt to the holes. Without this application of salt a certain percentage of the bushes grew up again, necessitating a further grubbing.

The forest centres are required to survey over a period of ten years the places where bushes have been destroyed. The number of bushes located and destroyed is recorded in a special register. The methods used, the costs incurred and the observations of the persons carrying out the work are also entered. The forest centres must submit to the Department of Forests before 31 December of each year a report of the progress in the destruction of these noxious plants.



**Southern Rhodesia: Locust Invasion, 1933 (1).**

Monthly Report No. 10, September, 1933.

Tropical Migratory Locust (*Locusta migratoria migratorioides*).

No reports of this species have been received during the month.

Red Locust (*Nomadacris septemfasciata*).

Winged swarms have been prevalent in most parts of the colony and have exhibited considerable activity, but their flights have been limited and have followed no particular direction.

The eastern border of the colony is haunted by large swarms which cross and recross the border between the eastern districts and Portuguese territory.

On the main plateau of the colony the swarms come and go from various directions. The formation adopted is very loose and the swarms tend to cover very big areas. Locusts detached from definite swarms are to be met with freely in many localities.

Appreciable damage is reported in respect to irrigated crops in certain parts of the colony.

At the end of the month the females mostly show the beginning of ovary development whilst the males have advanced considerably further in the direction of sexual maturity.

The colour of the locusts remains deep red and the purplish pink suffusion at the base of the hind wings is now well developed.

There are as yet no indications that egg-laying is imminent.

**Rumania: The San José Scale (2).**

Crop inspections carried out by the organisations of the Plant Protection Service have revealed the presence of the San José scale (*Aspidiotus perniciosus*) in Rumania.

Up to the present it has been observed in the following regions:—

Commune	Department
Pașal . . . . .	Sălaj
Boianul Mare . . . . .	"
Oarța de Jos . . . . .	"
Simlău . . . . .	"
Satu Mare . . . . .	Satu-Mare
Salonta . . . . .	Bihor
Ghioroc . . . . .	"
Arpășel . . . . .	"

(1) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

(2) Communication from the official correspondent of the Institute, Prof. G. ARION, Chief of the Plant Protection Service, Ministry of Agriculture and Estates, Bucharest.

Commune	Department
Timișoara . . . . .	Timiș-Torontal
Ceanad . . . . .	"
Tarnok . . . . .	"
Beta . . . . .	"
Gătaia . . . . .	"
Hăteș . . . . .	Hunedoara
Bucov . . . . .	Prahova
Mehadia . . . . .	Severin
Iablonița . . . . .	"
Bistra . . . . .	"
	Caras

This scale insect has certainly been present in certain of these regions (Salonta, Timișoara) for some years. In other regions (Bucov), on the contrary, it has been present only one or two years.

The San José scale is spreading in Rumania from west to east, which seems to indicate that the principal infection must be towards the western frontier.

As *A. perniciosus* has been reported for some years in Austria and Hungary, it is probable that the infection was brought in from these countries, with which Rumania has an active trade.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**French West Africa (Ivory Coast) (1).** — In virtue of the Decree of 28 July 1933, No. 2099 A. E., with a view to preventing the spread of diseases of the banana and more particularly of those known as stem rot (*Marasmius stenophyllus*) and Panama disease (*Fusarium cubense*), the sale and transport of banana suckers coming from plantations known to be infected are prohibited.

Any person producing banana suckers for purposes of sale is required to have his plantation inspected by an agent of the Service of Agriculture.

The sale and circulation of banana suckers may be authorised only on presentation of a certificate of phytosanitary inspection, detached from a counterfoil register, issued by the agent of the Service of Agriculture and stating that they do not come from a plantation infected with either of the diseases specified above.

This certificate is valid only for three months, after which a further inspection is required.

Requests for inspection of banana plantations must be addressed by the planters to the Lieutenant-Governor. Inspection will be carried out free of charge.

On any plot on which either of the diseases is found to be present burning of infected stools on the spot in the presence of the agent of the Service of Agriculture is obligatory, and of all stools within a radius of not less than 10 metres of the centre of infection. It is forbidden to re-plant the said plot with bananas within two years.

(1) Communication from the official correspondent of the Institute, Mr. A. MALLAMAIRE, Ingénieur d'Agronomie Coloniale, Director of the Phytopathological Laboratory, Bingerville, Ivory Coast.

**French West Africa (French Guinea).** — A Decree of 13 July 1933 carries regulations for the inspection of living plants presented for importation into French Guinea. (*Bulletin Mensuel de l'Agence Economique de l'Afrique Occidentale Française*, Paris, 1933, 14<sup>e</sup> année, n° 152, p. 264).

**French West Africa (French Sudan).** — A Decree of 22 August 1933, followed by instructions from the Governor of the Colony, provides for the organisation of locust reporting and control over the territory of the French Sudan. (*Ibid.*, n° 154, p. 328).

**Germany (1).** — A Decree of 3 October 1933, entered into force on 1 November 1933, amending the provisions of the Decree of 23 February 1932 which is intended to prevent the introduction of the Colorado beetle (*Leptinotarsa decemlineata*) from France [see this *Bulletin*, 1932, No. 4, pp. 56-57], prescribes a new model for the certificate of origin and health which must accompany any consignment of fresh vegetables and other such products and those containing fresh aerial parts of plants.

**Germany (Prussia).** — By Law of 29 June 1933 small amendments have been introduced into the Law of Agricultural and Forest Policy of 1 April 1880.

*Inter alia*, the right is conferred on the competent Minister and police authorities to issue ordinances relating to the protection or control of certain animal and plant species recognised respectively to be useful or dangerous. For this purpose the Minister is authorised to modify or amplify the regional regulations, more particularly those relating to game. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 11, S. 97).

\* \* By Police Ordinance of 28 July 1933, relating to the protection of bees, it is forbidden to spray flowering fruit trees with arsenic-containing materials.

Trees in the proximity of hives shall be sprayed only in the evening when the bees are no longer on the wing and by arrangement with the owner of the bees.

This Ordinance came into force on 1 August 1933 and will cease to be effective on 31 July 1943. (*Ämliche Pflanzenschutzbestimmungen*, Berlin 1933, Bd. V, Nr. 4, S. 112).

**England and Wales.** — With the object of preventing the introduction of diseases which might prove injurious to forest trees, the Importation of Elm Trees and Conifers (Prohibition) Order of 1933, dated October 24, 1933, which comes into operation on December 1, 1933, prohibits the landing in England or Wales from any country other than Scotland, Northern Ireland, the Irish Free State, the Isle of Man or the Channel Islands, of any living plants of the genera *Abies*, *Larix*, *Picea*, *Pinus*, *Pseudotsuga*, *Sequoia*, *Thuja* and *Tsuga*.

The Importation of Elm Trees (Prohibition) Order of 1926 [see this *Bulletin*, 1927, No. 2, p. 24] is now revoked, but its provisions have been embodied in the new Order.

(1). Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.

The health certificates prescribed under the Importation of Plants Order of 1933 [see *this Bulletin*, 1933, [No. 11, pp. 250-251] to accompany living plants imported from abroad must include a statement to the effect that the consignment does not contain any plants of the genera now prohibited. (*Statutory Rules and Orders*, 1933, No. 1011. *Destructive Insect and Pest, England. The Importation of Elm Trees and Conifers (Prohibition) Order of 1933. Dated October 24, 1933.* London, 1933, 2 pp.).

**Canada.** — A circular of the Secretary, Destructive Insect and Pest Act Advisory Board, Department of Agriculture, Ottawa, dated 28 July 1933 and addressed to importers in British Columbia, informs that on 1 August 1933 the Federal Department of Agriculture will take over the Horticultural Inspection Service in connection with the inspection of import and export shipments of plants and plant products. No charge will be made for the inspection of importations, but, on the other hand, the importer will be required to furnish any necessary labour incidental to inspection. Arrangements are being made for the inspection of shipments at the port of first arrival, at Vancouver, or on the premises of the importer.

In the case of deciduous plants originating in countries where the San José scale [*Aspidiotus perniciosus*] is known to exist (including United States and Asia), all importations of this nature will be routed on Vancouver for fumigation as a safeguard to the fruit-growing sections of the province. (In the case of such shipments, the transportation charges to and from the fumigation station will have to be borne by the importer).

The Head Office of the Inspection Service in Vancouver will be maintained at the Court House. An Inspector will also be maintained at the port of Victoria.

Importers of nursery stock will be required to continue to apply for permits to cover such importations. Applications for permits should be addressed as formerly to: The Secretary, Destructive Insect and Pest Act Advisory Board, Department of Agriculture, Ottawa.

In the case of interprovincial shipments of nursery stock, that is, plants originating in Canada and consigned to points in British Columbia, as this is a matter within the jurisdiction of the British Columbia Department of Agriculture, any modifications in regard to the Regulations dealing with such shipments will be issued by the Provincial Department. (Canada. Department of Agriculture. Destructive Insect and Pest Act Advisory Board. Circular to Importers in British Columbia re Transfer of Inspection Service. Ottawa, July 28, 1933, 1 p. [Mimeographed]).

**Danzig.** — By Decree of the Senate, dated 7 October 1933, trade in potatoes, with the exception of retail and itinerant trade, will be allowed only with special authorisation granted on request to persons recognised to be expert in the matter and sufficiently reliable. The authorisation may be withdrawn if the dealer fails to comply with the regulations or does not fulfil the necessary requirements. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg., Nr. 11, S. 97-98).

**Scotland.** — The Colorado Beetle (Scotland) Order of 1933, dated 24 August 1933, contains measures similar to those decreed in England by the Colorado Beetle Order of 1933, dated 23 August 1933 [see this *Bulletin*, 1933, No. 11, pp. 251-252] relating to the control of *Leptinotarsa decemlineata*. (*Statutory Rules and Orders*, 1933, No. 838, S. 46. *Destructive Insect and Pest, Scotland. The Colorado Beetle (Scotland) Order of 1933. Dated August, 24, 1933.* London, 1933, 5 pp.).

**Morocco (French Zone).** — By Decree of the Director of Waters and Forests, dated 11 September 1933, owners or holders of land included within the recognised zones of the civil control of the Zemmour are authorised to destroy, by any means except fire, rabbits causing damage to their crops. The present Decree will remain effective until the last day of the close season of 1934. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 22 septembre 1933, XX<sup>ème</sup> année, n° 1091, p. 940).

\* \* By Viziriel Decree of 13 September 1933 (22 joumada I 1352) the utilisation of plants, that is to say of any plant or part of a plant, wild or cultivated, which have received no industrial treatment of chemical or mechanical nature, and especially of hay or leaves, is forbidden for purposes of containing, packing, wrapping, decorating, protecting, conditioning or making up weight of products or objects of any sort intended for importation of transit in the French zone of the Cherifien Empire.

Exceptions to the above ruling will be allowed in the case of the following plants:—

Straw of wheat (*Triticum* spp.), of barley (*Hordeum* spp.), of oats (*Avena* spp.), of rye (*Secale cereale*);

Straw of rice (*Oryza* spp.) when coming from French West Africa;

Wrappings made with leaves of the date palm (*Phoenix dactylifera*);

Esparto grass (*Stipa tenacissima*);

Stems of the common reed (*Arundo Donax*) if barked, defoliated and split;

Coconut fibre (*Cocos nuciifera*);

Roots of ferns belonging to the genera *Polypodium*, *Pteris*, *Osmunda*;

Osiers (species of the genus *Salix* used in basket making);

Plants belonging to the various species of the Hypnaceae and Bryaceae (commonly known as mosses) and of the Sphagnaceae (sphagnum);

Leaves of species of the genera *Clinogyne* (Scitamineae) and *Mitragnyna* (Rubiaceae) when used as packing material for kola nuts.

Subject to the application of the regulations relating to plant sanitary policy and the control of plant parasites, the entry of hays into the French zone is authorised only in the form of mechanically pressed bales bound with iron wire.

Products or objects which are not packed in accordance with the requirements of the present Decree will be returned or destroyed, as preferred by the consignee or his representative, in conformity with the provisions of Article 7 of the Dahir of 20 September 1927 (23 rebia I 1346).

The agents of the Plant Protection Service and Phytosanitary Inspection may however authorise in exceptional cases the entry of products or objects of metal or made with inorganic substances the packing of which is not in accordance with the above requirements. But in such a case the consignee is required to carry out the measures demanded by the agents with a view to preventing the introduction of parasites. These measures will in every case include the destruction of the materials which have been used to pack, wrap, decorate or contain the said products or objects. (*Ibid.*, 13 octobre 1933, n° 1094, p. 1017-1018).

\*\*\* By Decree of the Director General of Agriculture, Commerce and Land Settlement, dated 21 September 1933, any person selling resins or resinsates for use in the control of plant parasites must indicate on the delivery note or invoice, on the wrappings, containers or packages and on the advertisements, posters or price lists :— (1) the content in total resin of the product sold, expressed in colophony ; (2) the content in water-soluble combined resin, expressed in colophony ; (3) the content in carbonate or free alkali, expressed in anhydrous sodium carbonate ; (4) the content in water. (*Ibid.*, 29 septembre 1933, n° 1092, p. 963).

\*\*\* A Decree of the Director General of Agriculture, Commerce and Land Settlement, dated 28 September 1933, annuls the Decree of 12 June 1928 enumerating the plant parasites which must appear on the certificates of sanitary inspection accompanying plant products on entry into the French Zone of the Cherifien Empire. (*Ibid.*, n° 1094, p. 1020-1021).

\*\*\* A Decree of the Director of Waters and Forests of the same date authorises owners and holders of land situated within the jurisdiction of the civil control circumscription of Taza-banlieue to destroy wild boars on their land at any time and by any means except fire. (*Ibid.*, n° 1094, p. 1021).

**Yugoslavia.** — By Decree No. 27230/11 of 1 May 1933, modifying the provisions of Decree No. 60367/11 of 23 July 1931, it is forbidden to import fruit trees and their fruits, ornamental and other trees and shrubs from the following countries :— North and South America, Australia, Japan, China, the Hawaiian Islands, Hungary and Austria, unless authorisation has been previously obtained from the Ministry of Agriculture.

A request for authorisation for importation addressed to the Ministry must be accompanied by a certificate from the Plant Protection Service of the country of origin stating that the place of origin of the consignment is free from the following insects :— *Aspidiotus perniciosus* and, except in the cases of Austria and Hungary, *Leptinotarsa decemlineata*, *Popillia japonica*, *Phthorimaea operculella*.

Consignments the importation of which has been authorised may be delivered to the consignees only after inspection by an expert appointed by the Ministry. It is necessary to indicate in the request addressed to the Ministry the place where it is desired that the customs formalities and delivery of the consignment should be made. (*Deutsches Handels-Archiv*, Berlin 1933, 87. Jahrg., 2. Oktoberheft, S. 2950-2951).

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